PMG3

Radyr Court Road, Danescourt

Site Investigation Report

11213/CS/13

Intégral
Géotechnique

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1.0 INTRODUCTION

1.1 GENERAL

PMG3 are proposing to develop an area of land at Radyr Court Road, Danescourt, for residential development.

Intégral Géotechnique (Wales) Limited have been appointed as the Geotechnical and Geo-environmental Engineers to undertake a desk study review of available information, and an exploratory site investigation to enable the appraisal of the site and provide a basis for design.

This report presents the findings of the desk study and exploratory investigation and gives outline recommendations for the design of foundations, floor slabs and other geo-environmental and geotechnical aspects of the project.

The objectives of the geo-environmental and geotechnical appraisal of the site are to:

- Assess the likelihood, degree, nature and extent of potential contamination and its implications for ownership, site reclamation and redevelopment;
- Examine and assess foundation characteristics; and
- Identify any other geotechnical constraints on redevelopment.

1.2 PROPOSED DEVELOPMENT

The proposed development is likely to comprise approximately 40No. traditional 2/3 storey residential properties, with associated gardens, parking areas, and associated infrastructure.

1.3 SCOPE OF WORKS

The work instructed included a desk study of available information, site reconnaissance and intrusive investigation. This was followed by laboratory testing, and geotechnical and geo-environmental reporting.

The desk study information was used to make an initial assessment of the site and to design an investigation to be carried out by Intégral Géotechnique (Wales) Limited.

1.3 SCOPE OF WORKS (CONTINUED)

The desk study comprised a review of publically available information including:

- An Envirocheck Report obtained for the site;
- Historical Ordnance Survey (OS) maps, included within the Envirocheck Report;
- Geological maps provided by the British Geological Survey (BGS); and
- The Environment Agency (EA) groundwater vulnerability map and aquifer database for the area.

The site investigation was designed with reference to BS5930:1999, the Code of Practice for Site Investigations, BS10175:2011, the Code of Practice for Investigation of Potentially Contaminated sites, and 'Land Contamination: A Guide for Developers' prepared by Welsh Local Government Association (WLGA)/Environment Agency Wales (EAW) Land Contamination Working Group, July 2006.

The site investigation consisted of:

- An intrusive investigation carried out during between the 19th and 22nd July 2013 comprising 9No. mechanically excavated trial pits, 5No. windowless sample boreholes and 2No. shell and auger boreholes;
- Falling head permeability testing carried out within two of the windowless sample boreholes; and
- Sampling of soil for laboratory physical and chemical testing.

1.4 LIMITATIONS

This document is intended to be a working document for further development in discussion with all concerned including the Local Planning Authority (LPA), the Natural Resources Wales (NRW) and the NHBC, as appropriate.

"Contamination" is taken throughout the report to mean the "presence of one or more potentially harmful substances as a result of human activity". The use of the term in this way does not imply that harm is being or might be caused by the contamination. It should be noted that "contamination" can have different meanings under different regulatory regimes, for example, planning, building control and Part IIA of the Environmental Protection Act 1990. Naturally elevated concentrations of potentially harmful substances may also be of concern and the significance of any that have been found is also evaluated in this report.

1.4 LIMITATIONS (CONTINUED)

It is important to recognise that there may be areas of contamination that have not been found, or that contaminants are present at concentrations above those that have been found.

It is also important to recognise that contamination may be localised and that no investigation, however comprehensive, is capable of finding such occurrences other than by chance.

At the time of the investigation, access to the northern and western reaches of the site was limited by dense vegetation and sloping ground considerations. The areas with access constraints are indicated on Figure 2.

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2.0 THE SITE

2.1 SITE LOCATION AND DESCRIPTION

The site is located at the northernmost end of Radyr Court Road, Cardiff. It is located adjacent to the far north eastern extents of Danescourt, alongside the Cardiff to Merthyr railway line. The River Taff lies to the eastern / north-eastern side of the site. The approximate centre of the site is at a National Grid Reference of 314240, 179260, see Figure 1.

The site is roughly rectangular in shape and occupies an area of land of approximately 2.2 hectares (Ha), consisting of two grass covered fields and an extensive area of semi-mature and mature woodland and scrub. There is a public footpath which runs through the site from the southern corner, nearly parallel with the western boundary and exits at the north-western corner. The site is surrounded by fences, semi-mature hedgerows and woodlands and the Taff Vale Railway embankment.

2.2 SITE OPERATIONS

The field was previously used for agricultural purposes, but appears to have been unused in recent years, judging by existing vegetation growth.

2.3 SURROUNDING LAND USE

The residential area of Danescourt lies to the south and west of the site. The Taff Vale railway line borders the east and north boundaries, beyond which lies the River Taff. Hailey Park playing fields and Llandaff North residential area are further removed to the north and east.

2.4 AVAILABLE SITE INVESTIGATION DATA

We are not aware of any previously available site investigation data for the subject site.

2.5 CONSULTATIONS WITH REGULATORS

The environmental and building control regulators have not been consulted at this stage.

3.0 SITE HISTORY

The recent history of the site has been traced with the aid of an Envirocheck Report, a copy of which is included in Appendix A. The Envirocheck Report includes the following scaled historical maps:

Map Scale	Dates
1:2,500	1880, 1900, 1920, 1942, 1954, 1961, 1971, 1986, 1989
1:1,250	1953, 1968, 1973, 1978, 1983, 1984, 1986, 1992, 1993
1:10,560	1886, 1901, 1922, 1938, 1947, 1949, 1951
1:10,000	1964, 1974, 1982, 1991, 1995, 2006, 2013

The earliest map, 1880, shows the site to be farmland, with the Taff Vale railway running on a raised embankment along the eastern / north-eastern boundary. The River Taff runs on the opposite side of the railway line. There is a quarry labelled 'Radyr Quarry' immediately adjacent to the northern boundary, with an associated rail track. The remaining surrounding land use at this time was also agricultural. Lower House was situated adjacent to the eastern corner of the site.

Between 1880 and 1942, the only significant changes close/adjacent to the site and to the west of the River Taff in general, had been the expansion of Radyr Quarry (in a westerly direction), but which by 1942 was shown as disused. On the eastern side of the River Taff, there had been development of a series of large residential areas, the working and closure of a cement and lime works, an additional railway line.

By 1988, Radyr Quarry was no longer labelled, but appeared as an area of woodland. The residential area of Danescourt had been developed to the west, which encroached up to the south-western and western site boundaries. A small area within the far south-west of the site was shown as an orchard, whilst a 'track' was shown crossing the site in a south-east to north-west direction.

There is very little change to the site or surrounding areas to the present day.

4.0 SITE ENVIRONMENTAL SETTING

4.1 PHYSICAL SETTING

The site lies approximately within the Danescourt/Llandaff residential area of Cardiff, approximately 4km north-west of Cardiff city centre. It lies at an elevation of approximately 25m AOD.

To the east of the public footpath which dissects the site, the topography of the site is gently sloping to the east/north-east towards the River Taff. To the west of the public footpath, the land slopes more steeply upwards towards residential gardens and properties.

The Flood Risk maps provided by the Environment Agency (as presented in the Envirocheck Report) indicate that the site does not lie within an area at risk of extreme flooding from rivers or the sea.

4.2 GEOLOGY

The 1:50,000 scale geological map (Sheet 263) shows that the site is underlain by Marginal Facies of the Mercia Mudstone Group which dip sub-horizontally at approximately 9 degrees in a south easterly direction. The Marginal Facies are reported to be variable but to typically comprise conglomerate and/or breccia.

The map indicates that the rock strata may be overlain by superficial deposits of Alluvium or Till, consisting respectively of clay, silt, sand and gravel or sands and gravels across the majority of the site.

The potential for made ground to exist would appear to be limited although the historical Radyr Quarry and subsequent landfill, encroached at least up to the site boundary.

The potential for ground stability hazards to exist at the site is recorded by the BGS as generally recorded as low to very low or no hazard.

4.3 RADON

The Envirocheck report indicates that the site is in a radon affected area, with between 3-5% of homes above the action level. It states that basic radon protective measures would be required for any new buildings constructed on the site.

4.4 MINING

The site is not located in a coal mining affected area.

4.5 HYDROLOGY AND HYDROGEOLOGY

The nearest registered water course is the River Taff which lies approximately 37m to the northeast.

In addition to the Envirocheck data, the Environment Agency website has been consulted for updated data and shows the bedrock beneath the site to be a Principal Aquifer.

These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

The Envirocheck and EA website maps indicate that the superficial deposits beneath the eastern/south-eastern area of the site are recorded as a Secondary A aquifer, with the remainder of the site recorded as Unproductive Strata.

Secondary A aquifers include permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

Tables 1 and 2 present a summary of the key hydrological nature of the site and hydrogeological features.

Table 1 : Summary of Site Hydrology

Feature	Distance from site	Flow	Classification	Abstraction	Discharge
River Taff	Approximately 37m to the north east of the site.	Less than 20 cumecs	B (Good Current Ecological Status)	N/A	Severn Estuary (via Cardiff Bay)
Surface run-off	N/A	Presumed Infiltration	N/A	N/A	Not known

4.5 HYDROLOGY AND HYDROGEOLOGY (CONTINUED)

Table 2: Summary of Site Hydrogeology

Geological Unit	Aquifer Classification	Aquifer Characteristics	Source Protection Zone	Groundwater Abstractions
Superficial deposits	Secondary A	Likely to have highly variable permeability and porosity. Perched water may be present with variable flow directions.	No	None
Mercia Mudstone Marginal Facies	Principal Aquifer	Conglomerate	No	None within 1km

The nearest water abstraction point identified by the Envirocheck data search is at the BBC facility, approximately 1029m south-east of the site. The water is abstracted from groundwater for 'Evaporative Cooling' and the yearly abstraction rate is unknown.

4.6 LANDFILL SITES

The EA website records three historical landfill sites within 250m of the site. These are as follows:

- The Radyr Quarry landfill, adjacent to the northern site boundary: operated from 1962 to 1970 and accepted all forms of inert, industrial, commercial, household and special wastes;
- Hailey Park, approximately 70m to the northeast, on the opposite side of the River Taff: operated from 1955 to 1970 and accepted all forms of inert, industrial, commercial, household and special wastes; and
- The Glamorganshire Canal which is on the opposite side of the River Taff: operated from 1931 to 1950 and accepted all forms of inert, industrial, commercial and household wastes.

4.7 POTENTIAL CONTAMINATION

Previous Uses

The various activities in the vicinity of the site which are thought likely to have resulted in ground or water resource contamination on this site are listed below in Tables 3, and 4. Reference to CLR the Department of the Environment Industry Profile has been made and a summary of the potential contaminants can be found in the tables

The site currently includes two large open fields, an area of semi-mature/mature woodland, areas of scrubland and a number of mature hedgerows and tree lines.

4.7 POTENTIAL CONTAMINATION (CONTINUED)

It is unlikely that there will have been large scale use of contaminants at the site beyond normal agricultural usage.

Offsite, the historical Radyr Quarry landfill is located immediately adjacent to the northern boundary. There is potential that the extents of the landfill may have encroached within the northern boundary of the site and/or a possibility of overspill of materials from the landfill operations.

Existing / Historical Uses

Table 3: Potential Contaminants			
Activity	**Material/Process**	**Contamination/Hazard (according to CLR 8)**	**Evidence**
Agricultural	Farming	None	Historical Maps and current site conditions

Adjacent Site Uses

Table 4: Potential Contaminants : Adjacent Site Uses		
Potential Contamination Source	**Boundary**	**Associated Contaminants and Hazards**
Historical Landfill	Adjacent to north of site	Dependent on materials disposed – potentially including metals, PAHs, asbestos, organics, hydrocarbons

A preliminary conceptual site model/conceptual exposure model has been developed for the site. This is based on the findings of the desk study, historical review, and site walk over and includes all potential sources, pathways and receptors that may be present on site. Those that have been identified as being potentially active require further investigation in the form sampling and testing of soils and groundwater, followed by appropriate risk assessment.

4.8 OTHER ENVIRONMENTAL ISSUES

The nearest pollution incident to controlled waters is recorded as a category 3 (minor incident) 548m south of the site, for 'Oils-Petrol' to impact a 'Drainage Ditch; Tributary of River Ely' as a result of an accidental discharge in 1998.

4.8 OTHER ENVIRONMENTAL ISSUES (CONTINUED)

The nearest discharge consent is located 401m to the south-east, licensed to Dwr Cymru Cyfyngedig for 'Trade Discharges - Site Drainage' to the River Taff.

The closest local authority pollution prevention and control (LA PPC) permit relates to 'James & Jenkins Garages Ltd', for 'Respraying of road vehicles', 571m to the east.

The closest ecologically sensitive designated site is the Local Nature Reserve of Hermit Wood, situated 370m to the north-west.

5.0 PRELIMINARY CONCEPTUAL SITE MODEL

5.1 RISK ASSESSMENT FRAMEWORK

In order to be consistent with current UK government policies and legislation, it is necessary to identify, make decisions on, and take appropriate action to deal with land contamination, in accordance with the procedures specified in the Environment Agency document 'Model Procedures for the Management of Land Contamination CLR-11' (Environment Agency 2004).

The risk assessment process is designed to provide a reasoned, structured and pragmatic mechanism for the identification of any potential human health and controlled waters risks associated with land contamination and where necessary to develop a robust remediation strategy to ensure protection of the sensitive receptors (human health of future residents, controlled waters, etc).

In accordance with the CLR-11 framework, risk is defined as:

'a combination of the probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequence of the occurrence'.

The three essential elements to any risk are defined by CLR-11 as follows:

- A contaminant, or hazard, which is in, on, or under the land and has the potential to cause harm (Source)
- A means by which a receptor can be exposed to, or affected by a contaminant or hazard (Pathway)
- A receptor, i.e. something which could be adversely affected by a contaminant or hazard, such as human health or groundwater (Receptor).

In order for there to be a potential risk, all three of the above elements must be present. If there is a source of contamination and a receptor (for example a resident or site user), then there is only a potential risk if there is a pathway linking the two. Such an active pathway is known as a relevant pollutant linkage. It is possible for the same contaminant to be linked to a receptor via a number of pathways, and hence it is important that all relevant pollutant linkages, to both human health and controlled waters, are separately identified on a site in order that a comprehensive conceptual model can be formed and ultimately a robust remediation strategy designed.

5.2 CONCEPTUAL MODEL FRAMEWORK

The preliminary stage of the risk assessment process is to develop and define a conceptual site model, based on the desk study and any existing site investigation data. This is used to establish any potential contaminant sources, identify existing and future receptors and assess if there are any potentially active pathways by which a potential risk may be present.

The preliminary conceptual site model will be developed and refined as site specific data is gathered, such as actual ground conditions and chemical data, resulting in a more robust conceptual understanding of the site.

5.3 CRITICAL SENSITIVE RECEPTOR – HUMAN HEALTH

The proposed redevelopment of the site is for a residential end-use. Therefore, the critical sensitive receptor from a human health perspective is an on-site residential receptor.

In accordance with CLEA guidance for a standard CLEA residential scenario, the critical sensitive receptor for a residential end use risk assessment is a female child, with exposure from 0 to 6 years.

The standard residential end use conceptual model defined by CLEA is assumed to be suitable for the purposes of this assessment.

5.4 CRITICAL SENSITIVE RECEPTOR – CONTROLLED WATERS

Based on the proposed redevelopment of the site for a residential end use, and the findings of the desk study, the critical sensitive receptor from a controlled water perspective is groundwater within both the Secondary A Aquifer within the superficial strata and the Principal Aquifer within the underlying bedrock.

5.5 POTENTIAL CONTAMINANT SOURCES

The desk study has identified extremely limited potential for contaminant sources both at and surrounding the site. These are restricted to the historical landfill located adjacent to the northern site boundary.

5.6 POTENTIAL EXPOSURE PATHWAYS

Potential exposure pathways for the critical receptors (both human health and controlled waters) are listed below:

- Dermal contact with soil and / or soil derived dust (indoors);
- Ingestion of soil and soil derived dust;
- Inhalation of soil derived dust – indoor and outdoor air
- Inhalation of soil derived vapours – indoor and outdoor air;
- Leaching of contaminants from made ground to groundwater; and
- Transportation of contaminants within groundwater.

In addition, the following exposure pathways have also been considered:

- Ground gas generation and migration; and
- Building materials durability.

5.7 SUMMARY OF CONCEPTUAL EXPOSURE MODEL

A preliminary conceptual exposure model has been developed for the site. This is based on the findings of the desk study, historical review and site walk over and includes all potential sources, pathways and receptors that may be present on site. Those that have been identified as being potentially active require further investigation in the form of sampling and testing of soils and groundwater, followed by appropriate risk assessment.

The preliminary conceptual exposure model will be reviewed and refined following the completion of the site works and laboratory testing.

Given the site's historical and current agricultural usage, it is considered likely that concentrations of potential contaminants within the natural ground will be low and/or naturally occurring. As such, the natural ground will pose limited to no threat to receptors consisting of current and future users, including residents and livestock, and controlled waters in the Secondary A and Principal Aquifer in the underlying strata.

Unless unanticipated contamination is identified during the site investigation, including any contamination which may have migrated from the historical landfill site to the north, the only potential receptors which may be impacted by the site are shown in Table 5. Given the topography of the site and likely groundwater flow direction, it would suggest a relatively low risk from migration of contaminants from the landfill through the sub-strata/groundwater.

5.7 SUMMARY OF CONCEPTUAL EXPOSURE MODEL (CONTINUED)

The preliminary conceptual exposure model is presented below in Table 5.

Table 5: Preliminary Conceptual Exposure Model

Source		Receptor	Pathway	Potentially Active Pathway?
Origin	Contaminant			
Potential Made Ground of unknown origin and/or made ground and contamination migrating from adjacent historical landfill to the north	Metals, semi-metals, non-metals, PAHs, organics, hydrocarbons Asbestos	Future Resident – human health	Dermal Contact with made ground/dust	✓
			Ingestion of soil and/or soil attached to home-grown produce	✓
			Ingestion of home-grown produce	✓
			Inhalation of dust	✓
			Inhalation of vapours – indoor/outdoor	✓
	Metals, semi-metals, inorganics, PAHs, organics, hydrocarbons	Groundwater quality	Leaching / infiltration from any made ground	✓
	Metals, semi-metals, inorganics, PAHs, organics, hydrocarbons	Surface water quality	Transportation within groundwater	✓
Natural ground and potential Made Ground of unknown origin, including historical landfill to north	pH, sulphates	Building Materials Durability	Direct contact	✓
Ground Gas – Organic gas producing materials within natural ground and in historical landfill to north	Methane, carbon dioxide, VOCs	Future Resident - Human health	Transportation through substrata / in groundwater leading to accumulation of gases in confined spaces on-site, leading to illness, asphyxiation, or risk of explosion	✓

6.0 THE SITE INVESTIGATION

6.1 FIELDWORKS

A site investigation was designed with reference to BS5930:1999, the Code of Practice for Site Investigations, BS10175:2011, the Code of Practice for Investigation of Potentially Contaminated Sites, and 'Land Contamination: A Guide for Developers' prepared by Welsh Local Government Association (WLGA)/Environment Agency Wales (EAW) Land Contamination Working Group, July 2006.

The site investigation was designed to provide information to support and refine the preliminary conceptual site model/conceptual exposure model, and to enable a geoenvironmental appraisal of the site to be made.

An investigation comprising 9 No. mechanically excavated trial pits, 5No. windowless sampling boreholes and 2No. cable percussive boreholes was undertaken in July 2013.

Due to access constraints, which included a heavily vegetated sloping area to the west of the public footpath and also dense woodland within the northern area of the site, the investigation locations were focused in the central eastern and south eastern areas of site. The approximate investigation locations are shown on Figure 2 with the access constrained areas also denoted. The ground conditions encountered are summarised in Section 7.

The purpose of the trial pits and boreholes was to investigate the shallow ground conditions and allow an assessment of the most appropriate foundation type for the proposed development.

The two cable percussive boreholes additionally investigated the deeper ground conditions and were installed with groundwater and ground gas monitoring wells. Two rounds of ground gas and groundwater monitoring have subsequently been completed with a further four to follow.

Falling head permeability tests were carried out in two of the window sample holes in order to assess/monitor the likely permeability of the natural ground.

Representative soil samples were taken from the window samples for laboratory physical testing. Strict quality control protocols were adopted during this process.

6.1 FIELDWORKS (CONTINUED)

The fieldworks were supervised by a qualified Geotechnical Engineer from Intégral Géotechnique (Wales) Limited who also logged the soils and prepared their detailed engineering logs in accordance with the requirements of BS5930: 1999.

The approximate investigation locations are shown on Figure 2, while the trial pit logs, windowless sample borehole logs and the cable percussive borehole logs are presented in Appendices B, C and D respectively. The results of the falling head tests are presented in Appendix E.

6.2 FIELD OBSERVATIONS

There was no visual / olfactory evidence of any made ground and/or contamination identified during the site investigation.

6.3 LABORATORY PHYSICAL TESTING

Representative soil samples were taken from intrusive locations across the site and dispatched to the laboratories of GEO Site and Testing Services Limited, in Llanelli.

The samples were tested for moisture content, pH, and water-soluble sulphate content, in order to assess the engineering properties of the soils and assess the required class of buried concrete. The results of the physical testing are presented in Appendix F.

7.0 GROUND CONDITIONS

A summary of the ground conditions encountered across the accessible portion of the site is presented below in Table 6.

SUMMARY OF ENCOUNTERED GROUND CONDITIONS		
Depth (m) From	To	Stratum
GL	0.15/0.3	TOPSOIL: Soft brown slightly sandy silty clay.
0.15/0.3	0.5/>3.3	ALLUVIUM: Medium dense or soft to firm and firm red/yellow brown very slightly to slightly gravelly, clayey to very clayey SAND or sandy to very sandy CLAY. Occasional pockets of softer/looser materials.
0.25/2.1	>1.0/3.9	ALLUVIUM: Dense red / pink brown sometimes slightly clayey gravelly to very gravelly SAND or sandy GRAVELS often with cobbles. Generally coarser with depth.
1.8/3.9	2.5/>5.2	PROBABLE BEDROCK: Red brown mudstone, limestone and hard quartzitic conglomerate recovered as gravels, cobbles and boulders

Note: all strength descriptives of in-situ materials are inferred

The site appears to be immediately underlain by superficial alluvial and glacial till deposits, consisting of sandy clays and sandy gravels and cobbles. There is no definitive geological sequence/order to these strata.

Probable bedrock was encountered at a depth of 1.8m below existing ground level (bgl) within TP5. This created very hard dig conditions and so the trial pit was extended away from the hard material. Although BH1 and BH2 encountered probable bedrock at 3.9mbgl and 3.15mbgl respectively, the bedrock profile could not be ascertained from this limited data.

The ground conditions within the area to the west of the public footpath remain uncertain as do those across a large swathe of the far northern woodland area.

All trial pits and boreholes remained dry although there was a slight dampness within the gravels and cobbles.

The majority of the trial pits remained stable, though there was some collapse/ravelling of the sides, within the gravels and cobble horizon, in two out of the nine pits.

No visible or olfactory traces of any contamination were noted.

7.1 TOPSOIL

Topsoil was encountered in all intrusive locations across the fields, up to a depth of 0.3m below ground level. This generally comprised soft brown sometimes very sandy and gravelly silt/clay.

7.2 SUPERFICIAL SOILS

The superficial soils encountered varied between a generally soft to firm / medium dense sandy CLAY / clayey SAND with some pockets/lenses of notably softer/looser materials, and a more competent, dense gravelly SAND or sandy GRAVELS which often contained many cobbles.

In the majority of positions the clayey horizon was encountered immediately above the sands/gravels/cobbles. However in TP5, WS1, WS2 and WS5 the sands/gravels/cobbles were not encountered, to a depth of up to 3.3mbgl in TP5. In WS4 and BH2 the sands/gravels/cobbles were encountered immediately beneath the topsoil layer, without an intervening clayey horizon.

In general, upon encountering the sands/gravels/cobbles the superficial soils were notably more competent / stronger than the generally overlying clayey horizon.

A number of the windowless sample holes refused to progress at relatively shallow depths. This was therefore interpreted as refusal upon hard strata/obstructions within the superficial soils (possibly the sands/gravels/cobbles horizon), rather than the underlying bedrock.

The results of three Atterberg Limit tests on samples of the shallow gravelly CLAY indicate that the materials are of generally low plasticity. The plasticity indexes narrowly vary from 7% to 8% with the percentage of materials passing the 0.425µm sieve being 100% for all three samples. There is therefore no modification to the plasticity indexes of 7% to 8%.

These results indicate that, in accordance with NHBC guidance, the soils are considered non-shrinkable.

The moisture contents of the clays were between 12% and 18%.

7.3 DEEPER GROUND CONDITIONS

The only trial pit which encountered probable bedrock was TP5. This was encountered as a layer of quartzitic conglomerate at 1.8mbgl, in the south western face of the pit. The conglomerate appeared to extend at this depth in a south west direction and the pit could not be progressed through it. The pit was therefore extended to the north east, where it could be progressed through deeper clayey materials.

Two deeper boreholes were progressed to a maximum depth of 5.2m below existing ground level, utilising a cable percussive drilling technique. The purpose of these boreholes was to investigate the deeper natural ground and to install groundwater/ground gas monitoring wells.

These boreholes encountered the probable bedrock at depths of 3.9mbgl (BH1) and 3.15mbgl (BH2). In BH1 this was noted as a red brown mudstone with limestone cobbles and boulders whilst in BH2 it was encountered and logged as limestone/mudstone.

7.4 GROUNDWATER

No groundwater was encountered in any of the intrusive locations. Occasionally the sands/gravels/cobbles were noted to be slightly damp, though this did not progress to a seepage.

To date, no groundwater has been noted identified in the groundwater monitoring wells in BH1 and BH2.

The groundwater conditions are based on observations made at the time of the fieldwork. It should be noted that groundwater levels may vary due to seasonal and other effects.

7.5 FALLING HEAD PERMEABILITY TESTS

Falling head permeability tests were carried out within windowless sample boreholes WS1 and WS4.

The results indicate likely permeability's within the sands, gravels and cobbles of between $2.0x10^{-5}$ m/s (WS4) to $5.1x10^{-5}$ m/s (WS1). Based on the results from these indicative tests, soakaway drainage is likely to be possible on this site.

The full results are included in Appendix F.

7.5 FALLING HEAD PERMEABILITY TESTS (CONTINUED)

It should be noted that the permeability of the tested ground may vary due to seasonal and other effects and it should be noted that this initial testing should only be regarded as indicative.

If it should be proposed to use soakaways for this site, then more extensive proposed soakaway location specific follow-up tests will be required and should fully comply with BRE 365, in order to confirm the suitability of the site and to satisfy the Local Authority and possibly the EA / National Resource Wales (NRW).

7.6 GROUND GAS

To date, two rounds of ground gas monitoring have been completed. The gas monitoring results indicate slightly elevated concentrations of carbon dioxide, with a maximum of 1.3%.

No methane, carbon monoxide, hydrogen sulphide or volatile organic compounds (VOCs) were recorded (above limits of detection) and there was no recordable flow from the wells.

8.0 CONTAMINATION AND REVISED CONCEPTUAL SITE MODEL

8.2 CONTAMINATION

No visual or olfactory indications of made ground/potentially contaminated materials were noted during the site investigation. Given the site's historical agricultural usage and current lack of use, it is considered likely that concentrations of potential contaminants within the natural ground will be low and/or naturally occurring.

As such, it is considered that the natural ground will pose limited threat to human health or the environment.

8.2 REVISED CONCEPTUAL EXPOSURE MODEL

As a result of the above observations, which indicates no contamination in those areas of site currently investigated, the conceptual model discussed in Section 5 is not considered to change.

Unless as yet unidentified made ground/contamination and/or gas generation or migration is encountered during future works, the site in its current condition is not deemed to present a risk to either current or future site users.

9.0 RISK ASSESSMENT

9.1 METHODOLOGY

The risk of pollution, health effects or environmental harm occurring as a result of ground contamination is dependent upon three principal factors:

- The scale of the contamination sources;
- The presence of sensitive "receptors", e.g. Humans: health of the general public, site occupiers, redevelopment workers. Environment: flora, fauna, etc; and
- The existence of migration pathways by which contaminants can reach the sensitive receptors.

This section assesses each of these factors in order to evaluate the overall level of risk and potential harm to receptors. The receptor may be human, a water resource, an eco-system or construction materials. Pathways connecting a perceived hazard to a receptor are referred to as exposure pathways.

The sources of contamination and the links connecting the hazards to the sensitive receptors will represent the basis for the risk assessment.

9.2 SOURCE-PATHWAY-RECEPTOR MODEL

The preliminary conceptual site model was based on the findings of the desk study. This was later reviewed and refined according to the findings of the site investigation, allowing for the ground conditions encountered and the results of laboratory testing of soil.

9.3 HUMAN HEALTH RISK ASSESSMENT

9.3.1 Site in its Present Condition

The site does not pose any significant risks to casual visitors or trespassers. The majority of the site is covered by grass and other vegetation.

9.3.2 Future Site Users

No visual or olfactory evidence of contamination or any made ground was identified during the site investigation.

9.3 HUMAN HEALTH RISK ASSESSMENT (CONTINUED)

It should be noted that this assessment is based on investigations undertaken with relatively limited access to the western and northern areas of site.

If any currently unidentified made ground/contamination should be encountered during future works, then it should be chemically analysed and the results assessed by a geoenvironmental consultant. Any contaminated materials deemed unacceptable should be removed and disposed of at a licensed landfill.

All excavations should be regularly checked for safe atmospheres.

Normal good hygiene practices should be adequate to protect the health and safety of redevelopment workers, and should include:

- Minimum handling of materials;
- Washing of hands prior to all meal breaks, which should be taken in a designated clean area;
- The use of standard protective clothing such as boots and overalls and gloves, where considered relevant.

In dry weather, inhalation of dust and gases should be avoided preferably by the use of dust suppression techniques to minimise fugitive emissions and minimization of exposed materials at any particular time.

A system should be established by which any 'unusual' materials that may be encountered are reported rapidly to the site management, so that the appropriate action may be taken, following specialist advice if necessary. An unusual material may be identified on site by colour, odour or physical nature.

Reference should be made to the Health and Safety Executive document "Protection of Workers and the General Public during the development of contaminated land" for detailed guidance on these matters.

9.4 RISKS TO VEGETATION

No significant visual or olfactory evidence of contamination was identified during the site investigation and the site is not currently used though historically it was agricultural land. The site is therefore not considered to pose any significant risks to vegetation.

Normal garden preparation requirements will apply. The depth of subsoil/topsoil placement should reflect the nature of the substrata after site clearance.

9.5 GROUNDWATER RISK ASSESSMENT

No sources of contamination have been identified on-site and it is considered that the site, when considering its previous and current uses, presents a negligible risk to controlled waters from in-situ soil generated contaminants.

However should made ground/potentially contaminated materials be encountered during site strip and preparation then these should be sampled and an assessment completed of the risk to controlled waters.

9.6 GROUND GAS RISK ASSESSMENT

No biodegradable materials were encountered during the site investigation and as such the gas generation potential of the materials encountered on-site is assessed as low.

The results from the ground gas monitoring, indicate that there is low risk of ground gases migrating laterally through the sub-stratum to affect the development in the area of site monitored to date.

However, there is an historical landfill (Radyr Landfill) adjacent to the northern boundary, with ground gas generation potential. Therefore, once access constraints have been removed, it would be advisable to confirm that the ground gas risk in the northern area of the site (closer to the historical Radyr Landfill) is consistent with the results obtained to date.

If any contaminated materials are encountered during future works, they should be excavated and removed from site. A gas risk assessment should then be undertaken, though the removal of any contaminated materials would reduce/remove the risk of gas/vapour production.

The BGS radon data indicates that basic radon protective measures are required for new buildings constructed within the site area. This is based upon the Envirocheck data search and local area BGS property searches. If a full BGS Radon report is required for the site, then we would be able to acquire it upon request.

9.7 RISKS TO BUILDINGS AND MATERIALS DURABILITY

Concrete Classification

A summary of the laboratory chemical test results for the chemicals water soluble sulphate and pH, which may adversely affect the durability of building materials, is presented in Appendix F.

In accordance with BRE Digest SD1:2005 and adopting the assessment procedure specified therein for greenfield sites, the laboratory chemical test results indicate a characteristic value (taking the highest of the test results) for water soluble sulphate within the natural ground of 50mg/l.

Using Table C1 of BRE Digest SD1:2005, this characteristic value corresponds to Design Sulphate Class DS-1.

The minimum pH value of the natural ground samples is 7.46. This indicates that the corresponding ACEC class (for 'static' groundwater due to a lack of identified groundwater) would be AC-1s.

9.7.2 Water Services

Based on the chemical analysis and observations undertaken to date, water pipes will not require any special protection measures from contaminants at the site, however, reference should be made to UKWIR Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites, document No. 10/WM/03/21.

9.8 SPOIL DISPOSAL

Under the Landfill Regulations (2002) all spoil materials should be classified if they require disposal to a landfill facility. To determine the appropriate type of landfill site, there will need to be a characterisation of the materials in relation to the Waste regulations.

The natural materials are tentatively classified as inert waste, but specialised testing will be required once earthworks design and volumes are known.

It is recommended that a sustainable development strategy is adopted which reduces to a practicable minimum the need for export of waste to a licensed tip.

9.8 SPOIL DISPOSAL (CONTINUED)

In order to minimise the potential for off-site disposal, the materials generated during the earthworks should be segregated and examined, with appropriate chemical testing as necessary, to enable the materials to be sorted or treated, with the resultant benefit of potentially generating re-use rather than disposal.

Excavated materials generated by the development may be considered as waste and subject to waste controls. Any re-use of excavated materials on-site should be undertaken in accordance with current waste and environmental legislation (e.g. Waste Framework Directive) and which may require the production of an approved Materials Management Plan (MMP) prepared in accordance with the CL:AIRE Code of Practice (CoP). Excavated natural materials may be suitable for direct transfer off site, under the CL:AIRE CoP.

Although none are anticipated, any asbestos containing materials are likely to be classified as hazardous waste.

9.9 UNCERTAINTIES

Due to dense vegetation and ecological/habitat constraints we were unable to access the sloping western portion of the site, which runs along the western side of the public footpath. As a result, the ground conditions in this area are currently unknown, including the potential presence and/or depth of superficial or other materials. These details should therefore be ascertained through further investigations once site conditions allow, in order to enable detailed design works to proceed.

Additionally access was also constrained by the woodland within the northern area of the site and so information on ground conditions in this area has been limited to two window sample boreholes. There may therefore be made/natural ground conditions that have not been identified by the intrusive investigations. Additionally the extent of the highwall to the backfilled quarry has not yet been established. It is possible that this feature may encroach onto the site.

It is important to recognise that there may be areas of contamination within the site that have not been found or that contaminants may be present at concentrations above those that have been found. It is also important to recognise that contamination may be localised and that no investigation, however comprehensive, is capable of finding such occurrences, other than by chance.

9.9 UNCERTAINTIES

Is should also be noted that lateral and vertical changes in ground conditions may be present in between the locations of the investigation locations drilled to date. The near surface drainage patterns have not been fully established.

10.0 ENGINEERING CONSIDERATIONS AND RECOMMENDATIONS

10.1 DETAILS OF PROPOSED DEVELOPMENT

The proposed development is likely to comprise approximately 40No. traditional 2/3 storey residential properties, with associated gardens, parking areas, and associated infrastructure.

10.2 SITE PREPARATION

Prior to works commencing on site, any services within the site area should be identified and either relocated or protected. Any existing underground services, including drainage runs and manholes, should be removed or protected and/or diverted from beneath the development area. We are aware that there are a number of foul and surface water sewer mains running beneath the site. Any diversionary works should be carried out under the supervision of, and to the specification of, the appropriate statutory authorities. Any resulting excavations should be backfilled with suitable acceptable granular fill material.

An ecological survey should be undertaken in order to identify any potential invasive plant species and potentially sensitive ecology. Although a survey has not been undertaken, observations suggest that Japanese knotweed is present along the railway embankment and it is possible that this may encroach onto the site. A scheme for the eradication of this pant should be established and carried out.

Any existing topsoil should be stripped from development areas and stockpiled on site for potential re-use in areas of gardens and soft landscaping.

Following a general strip of the topsoil and excavations to formation level of the competent sands/gravels/cobbles as required, it may be possible to re-use these materials within the development. The natural topsoil and subsoil materials are suitable for re-use within the proposed landscaped and garden areas of the site (topsoil) and as sub-soil and sub-formation (sandy clay / clayey sand).

It is recommended that the stripping of topsoil is done in phases so as to avoid large quantities of the exposed soils present below these layers becoming exposed to weathering. If these materials are exposed to prolonged weathering, site surface formations are likely to deteriorate rapidly and fine materials including clays are likely to be carried by surface water flow off the site (particularly given the site topography). It is further recommended that once areas of the site have been stripped, measures are put in place to control surface water run-off.

10.2 SITE PREPARATION (CONTINUED)

Following the site strip, the exposed surface of the site could deteriorate in poor weather and due to trafficking of plant.

We therefore recommend that to protect this surface from damage in wet weather, and to provide a suitable working platform for construction plant, the trafficked areas of site should be temporarily surfaced with a 200mm thick layer of single size granular material on a separation membrane (particularly in highly trafficked areas).

Although none has been identified to date, should future site development works encounter any localised made ground and/or contamination, there may be risk to workers from potential contaminants in the soils. Appropriate investigation and assessment may be required which may result in specific measures for works involving any made ground/contaminated materials encountered.

A system should be established by which any 'unusual' materials that may be encountered are reported rapidly to the site management so that appropriate action can be taken following specialist advice if necessary. An unusual material may be identified on site by colour, odour or physical nature.

Some areas of site are sloping, including areas within the northern woodland and particularly to the west/southwest of the public footpath which dissects the site. As a result, consideration must be given to appropriate methods of working and construction on sloping ground.

Depending on the final proposed levels, a varying degree of earthworks will be required to reach the development levels. The materials required to achieve finished levels, i.e. fill materials, topsoil, road construction materials etc. should be acceptable site processed or imported materials. Any shortfall in quantities shall be made up with clean, inert, granular imported materials in accordance with an agreed specification. These materials will need to be placed and compacted to achieve a suitable structural performance standard.

If any fill is to be placed onto an existing sloping area, then the original ground should be adequately cut and benched, in order to prevent the possibility of slippage at the interface between the new fill and the original ground. The reduced levels should be brought up to the required formation levels with well compacted imported or site won granular materials.

Any cut and/or fill slopes should be no steeper than 1 in 2. Cut off drains should be provided at the top and French drains at the bottom of any cut and/or fill slopes.

10.2 SITE PREPARATION (CONTINUED)

In areas of cut and/or fill, the slopes should be topsoiled and seeded with grass, in order to minimise any future maintenance problems caused by surface water run-offs.

Surface water and groundwater management will be required in order to ensure the protection to the earthworks and materials in both the temporary and permanent works.

Department of Transport (DTp) Type 1 sub-base, or similar approved, could be used and should be compacted in layers, in accordance with the DTp Specification for Highway Works.

All weak, soft or disturbed materials should be removed and conditioned or treated as necessary and then selected granular fill materials used to reinstate the ground to the required geotechnical performance requirements and depths.

There are many mature trees/hedges both along the edges of the site, and within the site area. Allowances should therefore be made for the removal of any associated roots that may become exposed in any nearby earthworks and foundation excavations. Any such works should be conducted in accordance with the code of practice recommended by the National House Building Council (NHBC).

Care must be given to works, particularly excavations, in the vicinity of the existing railway embankment.

10.3 FOUNDATIONS AND FLOOR SLABS

Based on the findings of the site investigation (assuming development from existing levels), it is considered that traditional strip/trench fill foundations could be used. These recommendations are applicable for those areas of site investigated to date and may not be fully applicable for those areas where access was constrained.

Strip foundations should bear on/within the medium dense to dense sandy gravels and cobbles which are generally encountered at shallow depths, typically being encountered beneath overlying sandy clays.

Generally the foundation depths are anticipated to be between 1.0m to 2.7mbgl, however in locations where softer materials are encountered, the trenches should be deepened until more competent strata is encountered.

10.3 FOUNDATIONS AND FLOOR SLABS (CONTINUED)

Additionally towards the central west/south-west, TP5 encountered probable bedrock at circa 1.8mbgl. This may indicate that the bedrock in this area of site is becoming progressively shallower to the southwest. If shallow competent bedrock is encountered at the intended foundation level, then this can be considered a suitable founding stratum.

To protect against the effects of frost heave and thermal shrinkage, foundation formations should be taken a minimum 900mm below the finished ground levels, unless competent bedrock is intercepted prior to this depth which would allow the minimum depth to be reduced to 600mm.

All strip/trench fill foundations for individual buildings should be constructed within uniform strata in order to minimise the potential for differential settlement. An allowable bearing pressure of 100kN/m^2 should be should be achievable within the medium dense to dense sandy gravels and cobbles and could be used for design purposes. At this intensity of loading total settlements should be less than 25mm, and any angular distortions caused by differential settlements should be less than 1:750.

Foundations may need to be locally deepened if any soft spots are encountered, or in the vicinity of mature trees in accordance with the NHBC recommendations. The in-situ clays have reported as being of low plasticity.

Where required, allowance should be made for strip footings to be stepped in accordance with NHBC guidance for construction on sloping sites. Alternatively, if cut and fill operations are significant in the sloping areas of the site, some properties may be constructed using raft foundations bearing onto structural fill placed in controlled and compacted layers. All formations should be adequately benched and all topsoil removed.

If softer and more compressible soils are encountered at anticipated foundation level, then trenches should be over deepened until more competent material is encountered.

All strip/trench fill foundations for individual buildings should be constructed within uniform strata in order to minimise the potential for differential settlement. There should be no spanning of foundations between cohesive and more granular soils.

If there is a significant change in the bearing strata beneath foundations, then allowance should be made for the footings to be reinforced, both top and bottom, across the change in the strata.

10.3 FOUNDATIONS AND FLOOR SLABS (CONTINUED)

If any footings are founded within clay soils then they may need to be over deepened in close proximity to existing trees or hedgerows in accordance with NHBC standards for low plasticity soils.

Floor Slabs

All ground slabs will require basic radon protective measures. Ground bearing floor slabs may be used where less than 600mm of structural make-up or made ground is present beneath the slab, otherwise suspended floor slabs will be required.

10.4 EXCAVATIONS AND FORMATIONS

Within the open fields (central and eastern site areas) and northern woodland area, excavations to the depth of the trial pits should be possible with normal soil excavating machinery. However, allowances should be made for the use of pneumatic breaker attachments, or similar tools, should any large obstructions, e.g. boulders, or shallow bedrock be encountered such as that in TP5, or as is anticipated within the un-investigated sloping west/southwest of the site. This is particularly relevant in areas of deep excavation such as service trenches.

Any 'soft spots/areas' should be removed and replaced with well compacted imported granular materials, as above.

Excavations to the depths of the current intrusive locations are unlikely to encounter significant groundwater inflows, although it should be noted that groundwater conditions can change dependant on seasonal and other factors, particularly on a site with this topography.

If any groundwater infiltrations are encountered, it should be possible to deal with them by using conventional pumping techniques. Any groundwater inflow may reduce the stability of excavations in more granular materials such as the sandy gravelly cobbles and will require pumping from any excavations. In sloping areas of the site it will be necessary to provide surface water controls such as cut-off trenches in order to control surface water migration during inclement weather.

The Envirocheck report states that there is a 'Low to Very Low Potential for Running Sand Ground Stability Hazards'. However the superficial soils include a high percentage of sand sized materials. Given the right conditions, relatively localised and isolated lenses/pockets of running sands may present a problem during below ground works.

10.4 EXCAVATIONS AND FORMATIONS (CONTINUED)

Sumps with controlled pumping of water will be required during excavation work for foundations and services.

Below the depths of the trial pits / boreholes and also in those areas of site which have not currently been investigated (to the west of the public footpath and the far northern woodland) ground conditions may vary. It is anticipated that the bedrock will be encountered at shallower depths on the sloping ground to the west/southwest of the public footpath.

The exposed formations within the in-situ cohesive materials will be extremely susceptible to damage, softening and deterioration by wet weather and site traffic. They should therefore be protected by blinding concrete or a 200mm thick layer of hardcore.

Any trenches required to be entered by personnel should be assessed and made safe in line with health and safety requirements, such as being temporarily battered back at gradients of typically 25° to 30°.

Due to the sloping topography in some areas of the site, where possible, excavations should be perpendicular to the slope. Where excavations are required to run parallel to the slope, appropriate precautions should be taken to ensure stability and safety of the works.

Any retaining walls will need to be designed to take account of potential groundwater effects and water pressures.

10.5 ACCESS ROADS AND CAR PARKING AREAS

Following the site strip there are likely to be variations in the strength of the materials at the formation levels. We recommend that for preliminary design purposes a California Bearing ratio (CBR) value of 2 to 5% could be adopted for the in-situ sandy clay soils subject to confirmation by in-situ testing. Such formations should be regarded as frost susceptible.

In giving these recommendations, we have assumed a flexible road design and construction will be utilised.

10.5 ACCESS ROADS AND CAR PARKING AREAS (CONTINUED)

It will be necessary to ensure this performance, and hence contingencies should be allowed for the removal of any soft spots/areas, (including softer shallow clay materials) and their replacement with well compacted granular fill materials, or the incorporation of full capping layers.

These should be placed in well compacted layers, in accordance with Department of Transport (DTp) Specification for Highway Works. It will be necessary to carry out in situ CBR testing to confirm these assumptions.

10.6 DRAINAGE

The borehole falling head test results suggest that soakaway drainage is likely to be effective within the superficial sandy gravels and cobbles.

10.7 RECOMMENDED FURTHER WORKS

Upon removal of the access constraints including the dense woodland within the northern area of site, further investigation works should be undertaken to assess the following items:

- the potential for made ground/contamination to exist closer to the historical landfill at the northern boundary of the site;
- the ground conditions within the northern and south/south western areas, including the potential depth to bedrock and proving the extent of the adjacent quarry highwall; and
- the ground gas conditions closer to the historical landfill at the northern site boundary, via a series of monitoring well installations and monitoring programme.

Upon completion of the earthworks design, the volumes and locations of materials requiring excavation and possible off-site disposal should be determined.

If ground levels are to be raised significantly in any areas of site and raft foundations constructed on the raised formations, allowances should be made for laboratory physical compaction testing ahead of the works, design and supervision of the earthworks and physical field testing and validation of the raised formations.

If sub-soil and/or topsoil materials were imported, then these should be chemically tested prior to importation and assessed to confirm suitability for use.

10.7 RECOMMENDED FURTHER WORKS (CONTINUED)

A strategy for the re-use and / or disposal of materials should be completed, potentially utilising the CL:AIRE Definition of Waste: Development Industry Code of Practice (Claire CoP) guidance or similar, in order to minimise the off-site disposal of materials to landfill and therefore the financial implications of any disposal. As the spoil materials would consist of clean naturally occurring soils, they would potentially be eligible for direct use (direct transfer) on another development site under the Claire CoP.

APPENDIX A

ENVIROCHECK REPORT

Intégral Géotechnique

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
47708148_1_1

Customer Reference:
11213

National Grid Reference:
314240, 179260

Slice:
A

Site Area (Ha):
2.15

Search Buffer (m):
1000

Site Details:

Radyr Court Road
CARDIFF

Client Details:

MR H Pritchard
Integral Geotechnique
Integral House
7 Beddau Way
Castlegate Business Park
Caerphilly
CF83 2AX

Landmark Information Group

Intégral Géotechnique

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Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.

In the attached datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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Report Version v47.0

Intégral Géotechnique

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1			4	12
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 4				6
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Nearest Surface Water Feature	pg 5		Yes		
Pollution Incidents to Controlled Waters	pg 5				16
Prosecutions Relating to Authorised Processes					
Prosecutions Relating to Controlled Waters					
Registered Radioactive Substances					
River Quality	pg 8	1			1
River Quality Biology Sampling Points	pg 9				1
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register	pg 9		1		
Water Abstractions	pg 9				(*4)
Water Industry Act Referrals					
Groundwater Vulnerability	pg 10	Yes	n/a	n/a	n/a
Bedrock Aquifer Designations	pg 10	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 10	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences	pg 10		Yes	n/a	n/a
Flooding from Rivers or Sea without Defences	pg 12		Yes	n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences	pg 12		Yes	n/a	n/a
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites	pg 13	1	2		2
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Recorded Landfill Sites					
Registered Landfill Sites					
Registered Waste Transfer Sites	pg 14			1	
Registered Waste Treatment or Disposal Sites					

Intégral Géotechnique

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					
Geological					
BGS 1:625,000 Solid Geology	pg 15	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 15	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 23				1
BGS Urban Soil Chemistry	pg 23	Yes		Yes	Yes
BGS Urban Soil Chemistry Averages	pg 26	Yes			
Brine Compensation Area			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain	pg 27	Yes	Yes	n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 27	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 27	Yes	Yes	n/a	n/a
Potential for Ground Dissolution Stability Hazards	pg 27	Yes		n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 27	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 28	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 28	Yes		n/a	n/a
Radon Potential - Radon Affected Areas	pg 28	Yes	n/a	n/a	n/a
Radon Potential - Radon Protection Measures	pg 28	Yes	n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 30		3	11	35
Fuel Station Entries	pg 34				3

Intégral Géotechnique

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves	pg 35			1	
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones					
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Construction & Repair Of Buildings Location: Radyr Court Development Authority: Environment Agency, Welsh Region Catchment Area: Not Given Reference: AF4007201 Permit Version: 1 Effective Date: 25th October 1973 Issued Date: 25th October 1973 Revocation Date: Not Supplied Discharge Type: Trade Discharges - Site Drainage Discharge Environment: Freshwater Stream/River Receiving Water: River Taff **Status: New Consent, by Application (Water Resources Act 1991, Section 88)** Positional Accuracy: Located by supplier to within 100m	A9NW (SE)	401	1	314630 178910
2	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Cso Highway By Ty Mawr Hse Cardiff, Cso In Front Of Ty Mawr House, Westbourne Crescent, Whitchurch Authority: Environment Agency, Welsh Region Catchment Area: River Taff Reference: An0086701 Permit Version: 2 Effective Date: 31st March 2000 Issued Date: 10th September 1999 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Taff **Status: Varied by Application - (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A18SW (NW)	426	1	314020 179760
3	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Cardiff-Westbourne Cres Sso Authority: Environment Agency, Welsh Region Catchment Area: River Taff Reference: AN0086701 Permit Version: 1 Effective Date: 20th October 1989 Issued Date: 20th October 1989 Revocation Date: 30th March 2000 Discharge Type: Unspecified Discharge Environment: Freshwater Stream/River Receiving Water: Taff **Status: New Consent, by Application (Water Resources Act 1991, Section 88)** Positional Accuracy: Located by supplier to within 100m	A18SE (N)	481	1	314400 179800
4	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewage Disposal Works - Water Company Location: A Package Sewage Treatment Works Re, Residential Dev At Radyr Sidings, Phase 2, Radyr Cardiff Authority: Environment Agency, Welsh Region Catchment Area: Not Supplied Reference: An0358201 Permit Version: 1 Effective Date: 9th December 2004 Issued Date: 9th December 2004 Revocation Date: 12th May 2011 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: River Taff **Status: Surrendered under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A18SW (N)	498	1	314032 179840

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	**Discharge Consents** Operator: Alloy Wheels International Ltd Property Type: Motor Vehicle Parts Location: Eurocast Trading Estate Forest Farm, Forest Farm Road Whitchurch Authority: Environment Agency, Welsh Region Catchment Area: River Taff Reference: AN0231201 Permit Version: 1 Effective Date: 29th November 1991 Issued Date: 28th November 1991 Revocation Date: 27th October 2000 Discharge Type: Trade Effluent Discharge Environment: Freshwater Stream/River Receiving Water: River Taff **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A18NW (N)	682	1	314030 180030
6	**Discharge Consents** Operator: Mcinerney Homes (West) Ltd Property Type: Construction & Repair Of Buildings Location: Cardiff - Melingriffith Res. D Authority: Environment Agency, Welsh Region Catchment Area: River Taff Reference: An0110004 Permit Version: 1 Effective Date: 31st October 1988 Issued Date: 31st October 1988 Revocation Date: 26th January 1994 Discharge Type: Unspecified Discharge Environment: Freshwater Stream/River Receiving Water: Taff **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A18NW (N)	685	1	314180 180050
7	**Discharge Consents** Operator: Dr & Mrs M J Meredith Property Type: Undefined Or Other Location: Llandaff House At Rear Of 18 Highfi, House At Rear Of 18 Highfields Authority: Environment Agency, Welsh Region Catchment Area: River Taff Reference: An0066301 Permit Version: 1 Effective Date: 22nd April 1988 Issued Date: 22nd April 1988 Revocation Date: 23rd September 1992 Discharge Type: Unspecified Discharge Environment: Freshwater Stream/River Receiving Water: Taff **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A9NW (SE)	742	1	314830 178630
7	**Discharge Consents** Operator: L G & C A Lewis Property Type: Undefined Or Other Location: Premises At Bridge Rd Llandaff Car, Llandaff Cardiff Authority: Environment Agency, Welsh Region Catchment Area: River Taff Reference: An0002901 Permit Version: 1 Effective Date: 19th April 1985 Issued Date: 19th April 1985 Revocation Date: 31st March 1995 Discharge Type: Unspecified Discharge Environment: Freshwater Stream/River Receiving Water: River Taff **Status: Consent expired** Positional Accuracy: Located by supplier to within 100m	A9NW (SE)	746	1	314800 178600

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
8	**Discharge Consents** Operator: Thomas G V Property Type: Undefined Or Other Location: Radyr Plot No 2 Heol Isaf Authority: Environment Agency, Welsh Region Catchment Area: River Taff Reference: An0044601 Permit Version: 1 Effective Date: 2nd October 1987 Issued Date: 2nd October 1987 Revocation Date: 6th March 1995 Discharge Type: Unspecified Discharge Environment: Land/Soakaway Receiving Water: Soakaway **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A12NW (W)	749	1	313380 179400
8	**Discharge Consents** Operator: Parry-Jones D & George J E M Property Type: Undefined Or Other Location: Not Supplied Authority: Environment Agency, Welsh Region Catchment Area: River Taff Reference: An0035701 Permit Version: 2 Effective Date: 11th August 1987 Issued Date: 11th August 1987 Revocation Date: 14th August 1992 Discharge Type: Unspecified Discharge Environment: Land/Soakaway Receiving Water: Soakaway **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A12NW (W)	781	1	313350 179420
8	**Discharge Consents** Operator: Parry-Jones D & George J E M Property Type: Undefined Or Other Location: Not Supplied Authority: Environment Agency, Welsh Region Catchment Area: River Taff Reference: An0035701 Permit Version: 1 Effective Date: 10th August 1987 Issued Date: 10th August 1987 Revocation Date: 10th August 1987 Discharge Type: Unspecified Discharge Environment: Land/Soakaway Receiving Water: Soakaway **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A12NW (W)	781	1	313350 179420
9	**Discharge Consents** Operator: Mcinerney Homes (West) Ltd Property Type: Construction & Repair Of Buildings Location: Cardiff - Melingriffith Res. Dev. -, Res. Dev. - Point 3 Authority: Environment Agency, Welsh Region Catchment Area: River Taff Reference: An0110003 Permit Version: 1 Effective Date: 31st October 1988 Issued Date: 31st October 1988 Revocation Date: 26th January 1994 Discharge Type: Unspecified Discharge Environment: Freshwater Stream/River Receiving Water: Taff **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A18NE (N)	778	1	314250 180140

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
10	**Discharge Consents** Operator: Mcinerney Homes (West) Ltd Property Type: Construction & Repair Of Buildings Location: Cardiff - Melingriffith Res. Dev. -, Res. Dev. - Point 2 Authority: Environment Agency, Welsh Region Catchment Area: River Taff Reference: An0110002 Permit Version: 1 Effective Date: 31st October 1988 Issued Date: 31st October 1988 Revocation Date: 7th February 1994 Discharge Type: Unspecified Discharge Environment: Freshwater Stream/River Receiving Water: Taff **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A18NE (N)	838	1	314250 180200
10	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Pumping Station - Water Company Location: P.S. Melingriffith Dev Emer. Card, Cardiff, Cardiff Cbc, Wales Authority: Environment Agency, Welsh Region Catchment Area: River Taff Reference: AN0110005 Permit Version: 1 Effective Date: 31st October 1988 Issued Date: 31st October 1988 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Taff **Status: New Consent, by Application (Water Resources Act 1991, Section 88)** Positional Accuracy: Located by supplier to within 100m	A18NE (N)	839	1	314260 180200
11	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Water Supply Grid Location: Radyr Authority: Environment Agency, Welsh Region Catchment Area: Not Supplied Reference: Am0009101 Permit Version: 1 Effective Date: 2nd October 1989 Issued Date: 2nd October 1989 Revocation Date: 14th March 1994 Discharge Type: Unspecified Discharge Environment: Land/Soakaway Receiving Water: Soakaway **Status: Consent expired** Positional Accuracy: Located by supplier to within 100m	A7NW (SW)	849	1	313400 178900
12	**Discharge Consents** Operator: Mcinerney Homes (West) Ltd Property Type: Construction & Repair Of Buildings Location: Cardiff - Melingriffith Res. Dev. -, Res. Dev. - Point 1 Authority: Environment Agency, Welsh Region Catchment Area: River Taff Reference: An0110001 Permit Version: 1 Effective Date: 31st October 1988 Issued Date: 31st October 1988 Revocation Date: 7th February 1994 Discharge Type: Unspecified Discharge Environment: Freshwater Stream/River Receiving Water: Taff **Status: Consent expired** Positional Accuracy: Located by supplier to within 10m	A23SE (N)	918	1	314250 180280
13	**Local Authority Pollution Prevention and Controls** Name: James & Jenkins Garages LtdTivoli Service Station Location: 27-35 Station Road, Llandaff North, CARDIFF, South Glamorgan, CF4 2FB Authority: Cardiff Council, Pollution Control Division Permit Reference: Ppc/33/6.4 Dated: 31st August 1993 Process Type: Local Authority Pollution Prevention and Control Description: PG6/34 Respraying of road vehicles **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A14SW (E)	571	2	314880 179002

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
14	**Local Authority Pollution Prevention and Controls** Name: Cooperative Service Station Location: Llantrisant Road, Llandaff, CARDIFF, South Glamorgan, CF5 2PW Authority: Cardiff Council, Pollution Control Division Permit Reference: PPC/82/1.2 Dated: 31st December 1998 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A12SE (W)	585	2	313573 179150
14	**Local Authority Pollution Prevention and Controls** Name: Shell Westward Ho (519) Location: Llantrisant Road, Radyr, CARDIFF, South Glamorgan, CF5 2PY Authority: Cardiff Council, Pollution Control Division Permit Reference: Epa90/77/1.4 Dated: 31st December 1998 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status: Authorised** Positional Accuracy: Automatically positioned to the address	A12SE (W)	587	2	313569 179155
15	**Local Authority Pollution Prevention and Controls** Name: Radyr Service Station Location: Llantrisant Road, Radyr, CARDIFF, West Glamorgan, CF5 2PY Authority: Cardiff Council, Pollution Control Division Permit Reference: PPC/87/1.2 Dated: 20th March 2000 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A8SE (S)	596	2	314329 178554
16	**Local Authority Pollution Prevention and Controls** Name: Prince Of Wales Hospital Location: Llantrisant Road, Rhydlafar, CARDIFF, South Glamorgan, CF5 6XG Authority: Cardiff Council, Pollution Control Division Permit Reference: Epa90/09/5.1 Dated: 1st August 1992 Process Type: Local Authority Air Pollution Control Description: PG5/1Clinical waste incineration processes under 1 tonne an hour **Status: Authorisation revokedRevoked** Positional Accuracy: Manually positioned to the road within the address or location	A12SW (W)	640	2	313505 179187
17	**Local Authority Pollution Prevention and Controls** Name: James & Jenkins Garages LtdTivoli Service Station Location: 14 Station Road, Llandaff North, CARDIFF, South Glamorgan, CF4 2FB Authority: Cardiff Council, Pollution Control Division Permit Reference: PPC/72/1.2 Dated: 31st December 1998 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A14SE (SE)	681	2	314981 178958
	Nearest Surface Water Feature	A13NE (NE)	37	-	314310 179351
18	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Texaco Filling Station , Llantrisant Road Authority: Environment Agency, Welsh Region Pollutant: Oils - Petrol Note: Accident; Drainage Ditch; Tributary Of River Ely Incident Date: 30th October 1998 Incident Reference: 37031 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A8NE (S)	548	1	314300 178600

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
18	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Underground Petrol Tank Authority: Environment Agency, Welsh Region Pollutant: Oils - Petrol Note: Accident; Drainage Ditch; Tributary Of River Ely Incident Date: 30th October 1998 Incident Reference: 37031 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A8NE (S)	553	1	314300 178595
19	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Danescourt Authority: Environment Agency, Welsh Region Pollutant: Chemicals - Alkali Note: Vandalism Incident Date: 2nd May 1995 Incident Reference: 23685 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Direct Discharge Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A9NW (SE)	564	1	314750 178800
20	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Glyntaff Welsh School, LLANDAFF Authority: Environment Agency, Welsh Region Pollutant: Foam/Soap Suds Note: Not Supplied Incident Date: 12th December 1995 Incident Reference: 26990 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9NE (SE)	781	1	314950 178700
21	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Opposite Alloy, WHITCHURCH Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Poor Operational Practise Incident Date: 9th March 1995 Incident Reference: 22788 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Overflow Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A23SW (N)	935	1	314200 180300
22	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Adjacent Alloid, Wheels Forest Farm, Industrial Estate Authority: Environment Agency, Welsh Region Pollutant: Sullage Note: Poor Operational Practise Incident Date: 12th September 1995 Incident Reference: 26256 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A23SE (N)	943	1	314300 180300
23	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Llandaff Weir, LLANDAFF Authority: Environment Agency, Welsh Region Pollutant: Unknown Note: Not Supplied Incident Date: 20th August 1991 Incident Reference: 1300 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9SE (SE)	945	1	314996 178506

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
23	**Pollution Incidents to Controlled Waters** Property Type: Process Location: Llandaff Weir, LLANDAFF Authority: Environment Agency, Welsh Region Pollutant: Light Oil Note: Accidental Spillage/Leakage Incident Date: 23rd July 1991 Incident Reference: 1204 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A9SE (SE)	949	1	315001 178506
23	**Pollution Incidents to Controlled Waters** Property Type: Process Location: Clarence Roadbridge Authority: Environment Agency, Welsh Region Pollutant: Light Oil Note: Accidental Spillage/Leakage Incident Date: 23rd July 1991 Incident Reference: 1204 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A9SE (SE)	949	1	314996 178501
23	**Pollution Incidents to Controlled Waters** Property Type: Process Location: Rowing Club, LLANDAFF Authority: Environment Agency, Welsh Region Pollutant: Light Oil Note: Accidental Spillage/Leakage Incident Date: 23rd July 1991 Incident Reference: 1204 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A9SE (SE)	952	1	315006 178506
23	**Pollution Incidents to Controlled Waters** Property Type: Process Location: Between, Cathedral Bridge Authority: Environment Agency, Welsh Region Pollutant: Mining Water Note: Accidental Spillage/Leakage Incident Date: 23rd July 1991 Incident Reference: 1204 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A9SE (SE)	953	1	315001 178501
23	**Pollution Incidents to Controlled Waters** Property Type: Process Location: Rowing Club Authority: Environment Agency, Welsh Region Pollutant: Light Oil Note: Accidental Spillage/Leakage Incident Date: 23rd July 1991 Incident Reference: 1204 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A9SE (SE)	953	1	314996 178496
23	**Pollution Incidents to Controlled Waters** Property Type: Process Location: 300 Yards Up Stream Of Club Authority: Environment Agency, Welsh Region Pollutant: Light Oil Note: Accidental Spillage/Leakage Incident Date: 23rd July 1991 Incident Reference: 1204 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A9SE (SE)	956	1	315001 178496

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
23	**Pollution Incidents to Controlled Waters** Property Type: Process Location: Weirpool Near, Llandaff Rowing Authority: Environment Agency, Welsh Region Pollutant: Light Oil Note: Accidental Spillage/Leakage Incident Date: 23rd July 1991 Incident Reference: 1204 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Leakage Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A9SE (SE)	956	1	315006 178501
23	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Bridge Between, Llandaff And, Sophia Gardens Authority: Environment Agency, Welsh Region Pollutant: Algae Note: Not Supplied Incident Date: 2nd July 1995 Incident Reference: 24781 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9SE (SE)	960	1	315006 178496
24	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Melingriffith, NEW HOUSES Authority: Environment Agency, Welsh Region Pollutant: Crude Sewage Note: Not Supplied Incident Date: 14th May 1991 Incident Reference: 404 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A23SW (N)	985	1	314150 180350
	River Quality Name: Taff GQA Grade: River Quality B Reach: Conf.Whitchurch Bk.-Conf.Melyn Griffith Estimated Distance (km): 3.2 Flow Rate: Flow less than 20 cumecs Flow Type: River Year: 2000	A13NE (NE)	0	1	314285 179315
	River Quality Name: Taff GQA Grade: River Quality B Reach: Conf.M.G.F.-Conf.Nant Y Fforest Goch Estimated Distance (km): 2.7 Flow Rate: Flow less than 20 cumecs Flow Type: River Year: 2000	A18NE (N)	734	1	314253 180096

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
25	**River Quality Biology Sampling Points** Name: Taff Reach: Confluence Whitchurch Brook To Confluence Melyn Griffith Estimated Distance: 3.20 Positional Accuracy: Located by supplier to within 100m Year: 1990 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 1995 GQA Grade: River Quality Biology GQA Grade B - Good Year: 2000 GQA Grade: River Quality Biology GQA Grade B - Good Year: 2002 GQA Grade: River Quality Biology GQA Grade Not Supplied Year: 2003 GQA Grade: River Quality Biology GQA Grade Not Supplied Year: 2004 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 2005 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 2006 GQA Grade: River Quality Biology GQA Grade C - Fairly Good Year: 2007 GQA Grade: River Quality Biology GQA Grade B - Good Year: 2008 GQA Grade: River Quality Biology GQA Grade B - Good Year: 2009 GQA Grade: River Quality Biology GQA Grade B - Good	A18NE (N)	844	1	314300 180200
26	**Substantiated Pollution Incident Register** Authority: Environment Agency Wales, South East Area Incident Date: 25th August 2001 Incident Reference: 26827 Water Impact: Category 3 - Minor Incident Air Impact: Category 4 - No Impact Land Impact: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m Pollutant: General Biodegradable : Other Pollutant: Inert : Construction / Demolition Material	A13NW (NW)	79	1	314097 179411
	Water Abstractions Operator: British Broadcasting Corporation Licence Number: 21/57/25/0054 Permit Version: 100 Location: Well At Llandaff Authority: Environment Agency, Welsh Region Abstraction: Other Industrial/Commercial/Public Services: Evaporative Cooling Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: WELL AT LLANDAFF Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 27th April 1977 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A9SE (SE)	1029	1	314969 178372
	Water Abstractions Operator: Alloy Wheels International Limited Licence Number: 21/57/25/0056 Permit Version: Not Supplied Location: Location Description Not Available Authority: Environment Agency, Welsh Region Abstraction: Metal: Non-Evaporative Cooling Abstraction Type: Not Supplied Source: Groundwater Daily Rate (m3): 1409 Yearly Rate (m3): 272760 Details: Not Supplied Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A23SW (N)	1175	1	314210 180540

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Mr W Povey Licence Number: 21/57/25/0041 Permit Version: 100 Location: Well At Tygwyn Authority: Environment Agency, Welsh Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 19th October 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A16SW (W)	1570	1	312620 179780
	Water Abstractions Operator: Cardiff Council Licence Number: Wa/057/0025/005 Permit Version: 1 Location: Radyr Weir Authority: Environment Agency, Welsh Region Abstraction: Production Of Energy: Hydroelectric Power Generation Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 7th February 2013 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A21NE (NW)	1816	1	313076 180819
	Groundwater Vulnerability Soil Classification: Soils of High Leaching Potential (U) - Soil information for restored mineral workings and urban areas is based on fewer observations than elsewhere. A worst case vulnerability classification (H) assumed, until proved otherwise Map Sheet: Sheet 36 Mid Glamorgan Scale: 1:100,000	A13NE (NE)	0	1	314282 179295
	Groundwater Vulnerability Soil Classification: Soils of Intermediate Leaching Potential (I1) - Soils which can possibly transmit a wide range of pollutants Map Sheet: Sheet 36 Mid Glamorgan Scale: 1:100,000	A13NE (SW)	0	1	314240 179264
	Drift Deposits Drift Deposit: Low permeability drift deposits occuring at the surface and overlying Major and Minor Aquifers are head, clay-with-flints, brickearth, peat, river terrace deposits and marine and estuarine alluvium Map Sheet: Sheet 36 Mid Glamorgan Scale: 1:100,000	A13SW (W)	0	1	314187 179245
	Bedrock Aquifer Designations Aquifer Desination: Principal Aquifer	A13NE (SW)	0	3	314240 179264
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A13NE (SW)	0	3	314240 179264
	Superficial Aquifer Designations Aquifer Designation: Unproductive Strata	A13NE (W)	0	3	314240 179264
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A13NE (NE)	15	1	314301 179328
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models and Fluvial Events Boundary Accuracy: As Supplied	A13NE (NE)	25	1	314301 179342
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SE (SE)	27	1	314366 179197

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13NE (E)	37	1	314361 179259
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13NE (NE)	39	1	314316 179348
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A13SE (E)	44	1	314366 179252
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SE (E)	45	1	314366 179251
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A13SE (E)	49	1	314369 179247
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SE (E)	52	1	314381 179224
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SE (E)	53	1	314376 179233
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A13SE (E)	54	1	314371 179242
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A13SE (E)	55	1	314386 179217
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A13SE (E)	56	1	314380 179227
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A13SE (SE)	58	1	314397 179197
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A13SE (E)	61	1	314381 179247
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SE (SE)	62	1	314401 179187
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A13SE (SE)	66	1	314405 179182
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SE (SE)	67	1	314406 179179
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A13SE (SE)	69	1	314408 179177

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SE (SE)	79	1	314416 179169
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A13SE (SE)	100	1	314436 179162
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models and Fluvial Events Boundary Accuracy: As Supplied	A13NE (E)	123	1	314446 179296
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A13NE (E)	127	1	314451 179289
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models and Fluvial Events Boundary Accuracy: As Supplied	A13SE (E)	167	1	314501 179230
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A13SE (E)	202	1	314541 179175
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SE (SE)	218	1	314521 179066
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A13SE (SE)	223	1	314524 179062
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SE (SE)	227	1	314526 179058
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied	A13SE (SE)	246	1	314538 179042
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13NE (NE)	25	1	314301 179342
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences Type: Flood Defences Reference: Not Supplied	A13SE (SE)	186	1	314509 179110

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
27	**Historical Landfill Sites** Licence Holder: Rural District Council Location: Radyr, Cardiff Name: Radyr Quarry Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD15230 First Input Date: 31st December 1960 Last Input Date: 31st December 1972 Specified Waste Type: Deposited Waste included Inert, Industrial, Commercial, Household and Special Waste EA Waste Ref: Not Supplied Regis Ref: Not Supplied WRC Ref: 6815/0089 BGS Ref: Not Supplied Other Ref: Not Supplied	A13NE (NE)	0	1	314267 179320
28	**Historical Landfill Sites** Licence Holder: Cardiff Corporation Location: Radyr, Cardiff Name: Hailey Park Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD15268 First Input Date: 31st December 1955 Last Input Date: 31st December 1970 Specified Waste Type: Deposited Waste included Inert, Industrial, Commercial, Household and Special Waste EA Waste Ref: Not Supplied Regis Ref: Not Supplied WRC Ref: 6815/0044 BGS Ref: Not Supplied Other Ref: Not Supplied	A13NE (NE)	71	1	314332 179378
29	**Historical Landfill Sites** Licence Holder: Cardiff Corporation Location: Cardiff, South Glamorganshire Name: Glamorganshire Canal Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD15236 First Input Date: 30th December 1931 Last Input Date: 31st December 1950 Specified Waste Type: Deposited Waste included Inert, Industrial, Commercial and Household Waste EA Waste Ref: Not Supplied Regis Ref: Not Supplied WRC Ref: 6815/0038 BGS Ref: Not Supplied Other Ref: 6815/0039	A13NE (E)	235	1	314539 179370
30	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Radyr, Cardiff Name: Radyr Comprehensive School Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD15250 First Input Date: 31st December 1942 Last Input Date: 31st December 1960 Specified Waste Type: Deposited Waste included Inert Waste EA Waste Ref: Not Supplied Regis Ref: Not Supplied WRC Ref: 6815/0088 BGS Ref: Not Supplied Other Ref: Not Supplied	A17SW (NW)	711	1	313532 179728
31	**Historical Landfill Sites** Licence Holder: Not Supplied Location: Llandaff Name: Watermill Road Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD15249 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Deposited Waste included Industrial and Household Waste EA Waste Ref: Not Supplied Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: 6815/9999	A7NE (SW)	749	1	313749 178627

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Local Authority Landfill Coverage Name: Cardiff Council - Has no landfill data to supply		0	5	314240 179264
32	**Registered Waste Transfer Sites** Licence Holder: City Of Cardiff (Operational Servs) Licence Reference: 92/07D Site Location: Ty Mawr Road, Civic Amenity Site, Cardiff, South Glamorgan Operator Location: Wedal Road, Roath, Cardiff, South Glamorgan Authority: Environment Agency Wales, South East Area Site Category: Civic Amenity Max Input Rate: Undefined Waste Source Restrictions: No known restriction on source of waste Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st June 1992 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the road within the address or location Boundary Quality: Not Supplied Authorised Waste: Batteries Bottles Household Waste/Refuse Metals Waste Oil	A18SE (NE)	406	1	314450 179700

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Triassic mudstones (including Keuper Marl, Dolomitic Conglomerate and Rhaetic)	A13NE (SW)	0	3	314240 179264
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NE (SW)	0	4	314240 179264
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (E)	0	4	314322 179255
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NW (NW)	0	4	314187 179352
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NE (E)	0	4	314241 179264
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NW (NW)	12	4	314175 179376
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NW (W)	127	4	314000 179264

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NW (NW)	132	4	314000 179373
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (S)	148	4	314240 179000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (S)	151	4	314315 179000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NW (NW)	163	4	314000 179440
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SW (SW)	191	4	314091 179083
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SW (S)	193	4	314163 179000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SW (SW)	225	4	314000 179140
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SW (SW)	315	4	314000 179000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (NW)	344	4	313934 179622
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (NE)	384	4	314517 179631
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8NE (SE)	398	4	314467 178794
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8NW (S)	479	4	314048 178733

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8NW (SW)	479	4	314000 178761
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8NW (SW)	482	4	314000 178761
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8NW (SW)	518	4	313927 178775
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NW (E)	556	4	314890 179283
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A8NW (S)	576	4	314000 178649
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NW (NE)	620	4	314885 179537

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (E)	630	4	314941 179000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NE (N)	635	4	314240 180000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NE (N)	643	4	314284 180000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (E)	660	4	315000 179264
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NW (N)	660	4	314000 180000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SE (NW)	667	4	313577 179715

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NE (N)	682	4	314241 180044
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NW (NW)	683	4	313927 180000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SE (E)	686	4	315000 179000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (W)	690	4	313525 179000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NW (N)	703	4	314176 180068
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NE (E)	718	4	315000 179518

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9NE (SE)	727	4	315000 178884
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SW (NW)	763	4	313556 179844
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SW (NW)	783	4	313539 179854
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SW (NW)	817	4	313530 179896
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17NW (NW)	877	4	313553 180000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19NW (NE)	911	4	314895 180000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A23SW (N)	940	4	314000 180287
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17NW (NW)	947	4	313451 180000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A9SE (SE)	950	4	315000 178504
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A23SE (N)	963	4	314292 180321
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A7NW (SW)	978	4	313300 178814
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19NE (NE)	986	4	315000 180000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A23SE (N)	998	4	314389 180341
33	**BGS Recorded Mineral Sites** Site Name: Radyr-Uchaf Location: , Radyr, Cardiff, Glamorgan Source: British Geological Survey, National Geoscience Information Service Reference: 127905 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Triassic Geology: Mercia Mudstone Group (Marginal Facies) Commodity: Sandstone Positional Accuracy: Located by supplier to within 10m	A17SW (NW)	725	3	313526 179744
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 314260, 179250 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 13.00 mg/kg Cadmium Measured Concentration: 1.00 mg/kg Chromium Measured Concentration: 62.00 mg/kg Lead Measured Concentration: 99.00 mg/kg Nickel Measured Concentration: 27.00 mg/kg	A13SE (SE)	0	3	314260 179250
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 313800, 179210 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 16.00 mg/kg Cadmium Measured Concentration: 2.00 mg/kg Chromium Measured Concentration: 57.00 mg/kg Lead Measured Concentration: 81.00 mg/kg Nickel Measured Concentration: 24.00 mg/kg	A12SE (W)	351	3	313800 179210
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 314250, 179710 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 17.00 mg/kg Cadmium Measured Concentration: 1.00 mg/kg Chromium Measured Concentration: 77.00 mg/kg Lead Measured Concentration: 44.00 mg/kg Nickel Measured Concentration: 20.00 mg/kg	A18SE (N)	352	3	314250 179710

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 314310, 178710 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 15.00 mg/kg Cadmium Measured Concentration: 0.50 mg/kg Chromium Measured Concentration: 64.00 mg/kg Lead Measured Concentration: 59.00 mg/kg Nickel Measured Concentration: 21.00 mg/kg	A8NE (S)	439	3	314310 178710
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 314780, 179210 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 19.00 mg/kg Cadmium Measured Concentration: 2.00 mg/kg Chromium Measured Concentration: 90.00 mg/kg Lead Measured Concentration: 883.00 mg/kg Nickel Measured Concentration: 57.00 mg/kg	A14SW (E)	441	3	314780 179210
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 314690, 179710 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 18.00 mg/kg Cadmium Measured Concentration: 2.00 mg/kg Chromium Measured Concentration: 55.00 mg/kg Lead Measured Concentration: 76.00 mg/kg Nickel Measured Concentration: 21.00 mg/kg	A19SW (NE)	561	3	314690 179710
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 314770, 178760 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 15.00 mg/kg Cadmium Measured Concentration: 1.00 mg/kg Chromium Measured Concentration: 72.00 mg/kg Lead Measured Concentration: 74.00 mg/kg Nickel Measured Concentration: 34.00 mg/kg	A9NW (SE)	606	3	314770 178760
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 314750, 179750 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 18.00 mg/kg Cadmium Measured Concentration: 0.50 mg/kg Chromium Measured Concentration: 70.00 mg/kg Lead Measured Concentration: 247.00 mg/kg Nickel Measured Concentration: 35.00 mg/kg	A19SW (NE)	633	3	314750 179750

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 313770, 178750 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 17.00 mg/kg Cadmium Measured Concentration: 2.00 mg/kg Chromium Measured Concentration: 64.00 mg/kg Lead Measured Concentration: 99.00 mg/kg Nickel Measured Concentration: 22.00 mg/kg	A7NE (SW)	652	3	313770 178750
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 314220, 178330 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 16.00 mg/kg Cadmium Measured Concentration: 1.00 mg/kg Chromium Measured Concentration: 77.00 mg/kg Lead Measured Concentration: 182.00 mg/kg Nickel Measured Concentration: 28.00 mg/kg	A8SW (S)	821	3	314220 178330
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 313260, 179260 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 17.00 mg/kg Cadmium Measured Concentration: 1.00 mg/kg Chromium Measured Concentration: 62.00 mg/kg Lead Measured Concentration: 73.00 mg/kg Nickel Measured Concentration: 21.00 mg/kg	A12NW (W)	870	3	313260 179260
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 314280, 180260 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 19.00 mg/kg Cadmium Measured Concentration: 5.00 mg/kg Chromium Measured Concentration: 78.00 mg/kg Lead Measured Concentration: 120.00 mg/kg Nickel Measured Concentration: 39.00 mg/kg	A18NE (N)	901	3	314280 180260
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 315260, 179300 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 18.00 mg/kg Cadmium Measured Concentration: 1.00 mg/kg Chromium Measured Concentration: 69.00 mg/kg Lead Measured Concentration: 214.00 mg/kg Nickel Measured Concentration: 25.00 mg/kg	A15NW (E)	927	3	315260 179300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 314740, 180180 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 18.00 mg/kg Cadmium Measured Concentration: 0.50 mg/kg Chromium Measured Concentration: 66.00 mg/kg Lead Measured Concentration: 90.00 mg/kg Nickel Measured Concentration: 33.00 mg/kg	A19NW (NE)	966	3	314740 180180
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 313250, 179750 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 21.00 mg/kg Cadmium Measured Concentration: 0.50 mg/kg Chromium Measured Concentration: 63.00 mg/kg Lead Measured Concentration: 62.00 mg/kg Nickel Measured Concentration: 18.00 mg/kg	A17SW (NW)	969	3	313250 179750
	BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 313750, 180260 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 20.00 mg/kg Cadmium Measured Concentration: 0.50 mg/kg Chromium Measured Concentration: 63.00 mg/kg Lead Measured Concentration: 53.00 mg/kg Nickel Measured Concentration: 23.00 mg/kg	A17NE (NW)	993	3	313750 180260
	BGS Urban Soil Chemistry Averages Source: British Geological Survey, National Geoscience Information Service Sample Area: Cardiff Count Id: 508 Arsenic Minimum Concentration: 6.00 mg/kg Arsenic Average Concentration: 18.00 mg/kg Arsenic Maximum Concentration: 151.00 mg/kg Cadmium Minimum Concentration: 0.50 mg/kg Cadmium Average Concentration: 1.30 mg/kg Cadmium Maximum Concentration: 82.00 mg/kg Chromium Minimum Concentration: 5.00 mg/kg Chromium Average Concentration: 89.00 mg/kg Chromium Maximum Concentration: 2456.00 mg/kg Lead Minimum Concentration: 15.00 mg/kg Lead Average Concentration: 190.00 mg/kg Lead Maximum Concentration: 7377.00 mg/kg Nickel Minimum Concentration: 10.00 mg/kg Nickel Average Concentration: 31.00 mg/kg Nickel Maximum Concentration: 437.00 mg/kg	A13NE (SW)	0	3	314240 179264

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Coal Mining Affected Areas In an area that might not be affected by coal mining				
	Non Coal Mining Areas of Great Britain Risk: Highly Unlikely Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	3	314240 179264
	Non Coal Mining Areas of Great Britain Risk: Rare Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	13	3	314174 179376
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	3	314240 179264
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	3	314240 179264
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	3	314321 179255
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	3	314321 179255
	Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	3	314240 179264
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	3	314240 179264
	Potential for Compressible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	17	3	314164 179376
	Potential for Compressible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	92	3	314348 179391
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	3	314240 179264
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	3	314321 179255
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	0	3	314221 179247
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	0	3	314187 179353
	Potential for Landslide Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	0	3	314187 179353
	Potential for Landslide Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	3	314321 179255
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	0	3	314253 179234
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	3	314240 179264
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	5	3	314325 179283
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	46	3	314192 179410

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	165	3	314042 179479
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	3	314321 179255
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	0	3	314187 179353
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	3	314240 179264
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (W)	0	3	314240 179264
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	17	3	314164 179376
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	92	3	314348 179391
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	3	314321 179255
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	0	3	314187 179353
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	3	314240 179264
	Radon Potential - Radon Protection Measures Protection Measure: Basic radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	0	3	314249 179264
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	0	3	314249 179300
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	3	314274 179325
	Radon Potential - Radon Protection Measures Protection Measure: Basic radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	0	3	314224 179275
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	3	314240 179264
	Radon Potential - Radon Affected Areas Affected Area: The property is in a radon affected area, as between 3 and 5% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	0	3	314249 179264
	Radon Potential - Radon Affected Areas Affected Area: The property is in a radon affected area, as between 1 and 3% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	0	3	314249 179300
	Radon Potential - Radon Affected Areas Affected Area: The property is in a radon affected area, as between 1 and 3% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	3	314274 179325

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Radon Potential - Radon Affected Areas Affected Area: The property is in a radon affected area, as between 3 and 5% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	0	3	314224 179275
	Radon Potential - Radon Affected Areas Affected Area: The property is in a radon affected area, as between 1 and 3% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A13NE (SW)	0	3	314240 179264

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
34	**Contemporary Trade Directory Entries** Name: Pressing Matters Location: 65, Nicholson-Webb Close, Cardiff, CF5 2RL Classification: Ironing & Home Laundry Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (W)	14	-	314164 179274
34	**Contemporary Trade Directory Entries** Name: Time For You (Cardiff) Ltd Location: 63, Nicholson-Webb Close, Cardiff, CF5 2RL Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (W)	18	-	314153 179281
35	**Contemporary Trade Directory Entries** Name: Fisher J Domestic Appliance Repairs Location: 67, Beale Close, Cardiff, CF5 2RU Classification: Domestic Appliances - Servicing, Repairs & Parts **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (S)	128	-	314300 179021
36	**Contemporary Trade Directory Entries** Name: Cardiff Car Parts Location: The Old Wagon Works,Radyr Ct Rd, Cardiff, South Glamorgan, CF5 2QF Classification: Engine Rebuilding & Reconditioning **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A13SW (SW)	270	-	314047 179014
37	**Contemporary Trade Directory Entries** Name: Home Clean Homes Location: 24, De Braose Close, Cardiff, CF5 2DH Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	287	-	313853 179422
38	**Contemporary Trade Directory Entries** Name: Rhians Cleaning Cardiff Location: 1, Hazelhurst Road, Cardiff, CF14 2FW Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A14NW (E)	346	-	314674 179275
39	**Contemporary Trade Directory Entries** Name: Good As New Location: 14, Holgate Close, Cardiff, CF5 2PE Classification: Carpet, Curtain & Upholstery Cleaners **Status: Active** Positional Accuracy: Automatically positioned to the address	A12NE (NW)	371	-	313823 179550
40	**Contemporary Trade Directory Entries** Name: Diamond Transport & Recovery Location: 1, West Road, Cardiff, CF14 2FT Classification: Breakdown and Recovery **Status: Active** Positional Accuracy: Automatically positioned to the address	A14NW (NE)	399	-	314671 179471
41	**Contemporary Trade Directory Entries** Name: Cardiff Deep Clean Specialists Ltd Location: Units 1-4, Ty Mawr Lane,Off Station Road, Llandaff North, Cardiff, South Glamorgan, CF14 2FE Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Manually positioned to the road within the address or location	A14NW (E)	417	-	314736 179346
42	**Contemporary Trade Directory Entries** Name: Deburring & Finishing Location: 51, Ty-Mawr Road, Llandaff North, Cardiff, CF14 2FN Classification: Abrasive Products - Wholesalers **Status: Active** Positional Accuracy: Automatically positioned to the address	A14NW (E)	424	-	314707 179457
42	**Contemporary Trade Directory Entries** Name: Anvil Distribution Location: Unit 3 Ty-Mawr Rd, Llandaff North, Cardiff, South Glamorgan, CF14 2FN Classification: Distribution Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A14NW (E)	444	-	314726 179464

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
43	**Contemporary Trade Directory Entries** Name: Brooks Location: 2, Clos Tyclyd, Cardiff, CF14 2HP Classification: Air Conditioning & Refrigeration Contractors **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (N)	460	-	314288 179812
44	**Contemporary Trade Directory Entries** Name: Goldprint Location: Unit 5A,Andrews Rd Ind Est,Andrews Rd, Cardiff, South Glamorgan, CF14 2JP Classification: Screen Process Printers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A14SW (SE)	488	-	314778 178972
44	**Contemporary Trade Directory Entries** Name: Visible Art Location: Old Victoria Buildings, Andrews Road, Cardiff, South Glamorgan, CF14 2JP Classification: Screen Process Printers **Status: Active** Positional Accuracy: Manually positioned to the address or location	A14SW (SE)	500	-	314796 178981
45	**Contemporary Trade Directory Entries** Name: Eclipse Print Management Ltd Location: 11, Evansfield Road, Cardiff, CF14 2FA Classification: Printers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (E)	515	-	314812 179440
46	**Contemporary Trade Directory Entries** Name: Lodgesons Location: 129, Station Road, Llandaff North, Cardiff, South Glamorgan, CF14 2FE Classification: Disability Equipment - Manufacturers & Suppliers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (E)	518	-	314831 179385
46	**Contemporary Trade Directory Entries** Name: Westgriff Garage Location: 137, Station Road, Llandaff North, Cardiff, CF14 2FE Classification: Car Body Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (E)	530	-	314839 179404
46	**Contemporary Trade Directory Entries** Name: Sr Autos Location: 137, Station Road, Llandaff North, Cardiff, South Glamorgan, CF14 2FE Classification: Garage Services **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A14NW (E)	530	-	314839 179404
46	**Contemporary Trade Directory Entries** Name: Dusters Location: 118, Station Road, Llandaff North, Cardiff, CF14 2FH Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A14NW (E)	551	-	314866 179380
46	**Contemporary Trade Directory Entries** Name: Dusters Wales Ltd Location: 118, Station Road, Llandaff North, Cardiff, South Glamorgan, CF14 2FH Classification: Commercial Cleaning Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A14NW (E)	551	-	314866 179380
47	**Contemporary Trade Directory Entries** Name: Llandaff Recons Location: 2a, Hawthorn Road East, Cardiff, CF14 2LS Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A14SW (E)	532	-	314870 179229
48	**Contemporary Trade Directory Entries** Name: Dents Plus Location: 43, Herbert March Close, Cardiff, CF5 2TD Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A12SE (W)	533	-	313602 179250

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
49	**Contemporary Trade Directory Entries** Name: James & Jenkins Garages Ltd Location: Sales & Reception, 27-35, Station Road, Llandaff North, Cardiff, CF14 2FB Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A14SW (E)	564	-	314877 179015
49	**Contemporary Trade Directory Entries** Name: James & Jenkins Ltd Location: Sales & Reception, 27-35, Station Road, Llandaff North, Cardiff, South Glamorgan, CF14 2FB Classification: Car Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SW (E)	564	-	314877 179015
49	**Contemporary Trade Directory Entries** Name: James & Jenkins Location: Sales & Reception, 27-35, Station Road, Llandaff North, CARDIFF, CF14 2FB Classification: Car Dealers - Used **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SW (E)	564	-	314877 179015
49	**Contemporary Trade Directory Entries** Name: James & Jenkins Garages Location: Sales & Reception, 27-35, Station Road, Llandaff North, Cardiff, CF14 2FB Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SW (E)	564	-	314877 179015
49	**Contemporary Trade Directory Entries** Name: James & Jenkins Car Dealers Location: 25, Station Road, Llandaff North, Cardiff, CF14 2XT Classification: Car Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A14SW (SE)	597	-	314903 178989
49	**Contemporary Trade Directory Entries** Name: James & Jenkins Location: Showroom, 1-23, Station Road, Llandaff North, Cardiff, CF14 2FB Classification: Mot Testing Centres **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SW (SE)	597	-	314903 178989
50	**Contemporary Trade Directory Entries** Name: Texaco Location: Llantrisant Rd, Cardiff, South Glamorgan, CF5 2PW Classification: Petrol Filling Stations - 24 Hour **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A7NE (SW)	564	-	313834 178810
51	**Contemporary Trade Directory Entries** Name: Pioneer Printing Services Location: 30, Alfreda Road, Cardiff, CF14 2EH Classification: Printers **Status: Active** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	581	-	314676 179753
52	**Contemporary Trade Directory Entries** Name: Radyr Filling Station Location: Llantrisant Road, Cardiff, CF5 2PY Classification: Petrol Filling Stations **Status: Active** Positional Accuracy: Automatically positioned to the address	A12SE (W)	587	-	313569 179155
53	**Contemporary Trade Directory Entries** Name: Alloy Wheels International Ltd Location: Forest Farm Road, Cardiff, CF14 7JH Classification: Alloys **Status: Inactive** Positional Accuracy: Automatically positioned in the proximity of the address	A18NE (N)	594	-	314238 179956
54	**Contemporary Trade Directory Entries** Name: Reed Furniture Location: Old Victoria Buildings,Andrews Rd, Llandaff North, Cardiff, S Glam, CF14 2JP Classification: Cabinet Makers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A9NW (SE)	626	-	314889 178887

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
54	**Contemporary Trade Directory Entries** Name: Clarity Copiers Ltd Location: Ground Floor Charlesworth Ho,Andrews Rd, Cardiff, South Glamorgan, CF14 2JP Classification: Photocopiers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A9NW (SE)	628	-	314896 178896
54	**Contemporary Trade Directory Entries** Name: D & S Location: Unit 7I, Andrews Road Industrial Estate, Andrews Road, Cardiff, CF14 2JP Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned in the proximity of the address	A9NW (SE)	629	-	314897 178896
54	**Contemporary Trade Directory Entries** Name: A H Motors Location: 5, Andrews Road, Cardiff, CF14 2JN Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	657	-	314908 178857
54	**Contemporary Trade Directory Entries** Name: Rangecraft Location: 5, Andrews Road, Cardiff, South Glamorgan, CF14 2JN Classification: Catering Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	657	-	314908 178857
55	**Contemporary Trade Directory Entries** Name: R G Motors Location: Llantrisant Road, Cardiff, CF5 2PW Classification: Car Dealers - Used **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SE (S)	632	-	314348 178519
56	**Contemporary Trade Directory Entries** Name: Car Bumper Repairs Cardiff Location: 42, Athelstan Road, Cardiff, CF14 2EP Classification: Car Body Repairs **Status: Active** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	636	-	314648 179848
57	**Contemporary Trade Directory Entries** Name: Wallpaper World Location: 3, Heol Don, Cardiff, South Glamorgan, CF14 2AR Classification: Wallpapers & Wall Coverings **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	677	-	314836 179717
58	**Contemporary Trade Directory Entries** Name: South Glam Fire Protection Location: 50, Chamberlain Road, Cardiff, CF14 2LX Classification: Firefighting Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SE (E)	708	-	315048 179165
59	**Contemporary Trade Directory Entries** Name: Tivoli Service Station Location: Tivoli Garage, Station Road, Llandaff North, CARDIFF, CF14 2FF Classification: Petrol Filling Stations **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A14SE (SE)	709	-	315003 178936
59	**Contemporary Trade Directory Entries** Name: Midas Location: 49, Clarbeston Road, Cardiff, CF14 2LP Classification: Wrought Ironwork **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14SE (E)	732	-	315036 178961
60	**Contemporary Trade Directory Entries** Name: The Harvey Jones Adolescent Unit Location: Velindre Road, CARDIFF, CF14 2TG Classification: Hospitals **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	783	-	314447 180104

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
61	**Contemporary Trade Directory Entries** Name: Fleetway Contract Services Location: 16, Woodfield Avenue, Radyr, Cardiff, CF15 8EF Classification: Laundry Equipment - Sales & Service **Status: Active** Positional Accuracy: Automatically positioned to the address	A17SW (NW)	839	-	313449 179832
62	**Contemporary Trade Directory Entries** Name: A P S Damproofing & Restoration Ltd Location: Flat 3, Meadowbank Court, Waterhall Road, Cardiff, CF5 3LU Classification: Damp & Dry Rot Control **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7SE (SW)	863	-	313636 178581
63	**Contemporary Trade Directory Entries** Name: First Cleaning Solutions Ltd Location: Church Rd, Whitchurch, Cardiff, South Glamorgan, CF14 2EA Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A19SE (NE)	882	-	315034 179796
64	**Contemporary Trade Directory Entries** Name: Dragondoors Location: Blosse Rd, Cardiff, South Glamorgan, CF14 2JB Classification: Door Manufacturers - Industrial **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A9NE (SE)	894	-	315122 178754
65	**Contemporary Trade Directory Entries** Name: 1st Nationwide C.U.C Location: 14, Fairwood Road, Cardiff, CF5 3QJ Classification: Carpet, Curtain & Upholstery Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A3NE (S)	963	-	314262 178185
66	**Fuel Station Entries** Name: Radyr Service Station Location: Llantrisant Road, Cardiff, CF5 2PY Brand: Gulf Premises Type: Petrol Station **Status: Open** Positional Accuracy: Manually positioned to the address or location	A12SE (W)	581	-	313578 179148
67	**Fuel Station Entries** Name: Co-Op Llandaff Location: Llantrisant Road, Llandaff, Cardiff, South Glamorgan, CF5 2PW Brand: TEXACO Premises Type: Petrol Station **Status: Open** Positional Accuracy: Manually positioned to the address or location	A8SE (S)	630	-	314377 178525
68	**Fuel Station Entries** Name: Tivoli Garage Location: 14 Station Road, Llandaff, Cardiff, South Glamorgan, CF14 2FB Brand: TEXACO Premises Type: Petrol Station **Status: Open** Positional Accuracy: Manually positioned to the address or location	A14SE (SE)	709	-	315003 178936

Sensitive Land Use

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
69	**Local Nature Reserves** Name: Hermit Wood Multiple Area: N Area (m2): 14737.97 Source: Cardiff Council Designation Date: 31st December 1985	A12NE (NW)	370	5	313858 179592

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Caerphilly County Borough Council - Environmental Health Department	August 2012	Annual Rolling Update
Cardiff Council - Pollution Control Division	October 2012	Annual Rolling Update
Rhondda Cynon Taff County Borough Council - Environmental Services	October 2012	Annual Rolling Update
Vale Of Glamorgan County Borough Council - Environmental Health Department	October 2012	Annual Rolling Update
Discharge Consents		
Environment Agency - Welsh Region	April 2013	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Welsh Region	March 2013	Quarterly
Integrated Pollution Controls		
Environment Agency - Welsh Region	October 2008	Not Applicable
Integrated Pollution Prevention And Control		
Environment Agency - Welsh Region	April 2013	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Caerphilly County Borough Council - Environmental Health Department	February 2013	Annual Rolling Update
Rhondda Cynon Taff County Borough Council - Public Health and Protection Division	February 2013	Annual Rolling Update
Cardiff Council - Pollution Control Division	January 2013	Annual Rolling Update
Vale Of Glamorgan County Borough Council - Environmental Health Department	November 2012	Annual Rolling Update
Local Authority Pollution Prevention and Controls		
Caerphilly County Borough Council - Environmental Health Department	February 2013	Annual Rolling Update
Rhondda Cynon Taff County Borough Council - Public Health and Protection Division	February 2013	Annual Rolling Update
Cardiff Council - Pollution Control Division	January 2013	Annual Rolling Update
Vale Of Glamorgan County Borough Council - Environmental Health Department	November 2012	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
Caerphilly County Borough Council - Environmental Health Department	February 2013	Annual Rolling Update
Rhondda Cynon Taff County Borough Council - Public Health and Protection Division	February 2013	Annual Rolling Update
Cardiff Council - Pollution Control Division	January 2013	Annual Rolling Update
Vale Of Glamorgan County Borough Council - Environmental Health Department	November 2012	Annual Rolling Update
Nearest Surface Water Feature		
Ordnance Survey	July 2012	Quarterly
Pollution Incidents to Controlled Waters		
Environment Agency - Welsh Region	December 1998	Not Applicable
Prosecutions Relating to Authorised Processes		
Environment Agency - Welsh Region	March 2013	Quarterly
Prosecutions Relating to Controlled Waters		
Environment Agency - Welsh Region	March 2013	Quarterly
Registered Radioactive Substances		
Environment Agency - Welsh Region	April 2013	Quarterly
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points		
Environment Agency - Head Office	July 2012	Annually
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	July 2012	Annually
Substantiated Pollution Incident Register		
Environment Agency Wales - South East Area	April 2013	Quarterly
Water Abstractions		
Environment Agency - Welsh Region	April 2013	Quarterly
Water Industry Act Referrals		
Environment Agency - Welsh Region	April 2013	Quarterly
Groundwater Vulnerability		
Environment Agency - Head Office	January 2011	Not Applicable

Data Currency

Agency & Hydrological	Version	Update Cycle
Drift Deposits		
Environment Agency - Head Office	January 1999	Not Applicable
Bedrock Aquifer Designations		
British Geological Survey - National Geoscience Information Service	October 2012	Annually
Superficial Aquifer Designations		
British Geological Survey - National Geoscience Information Service	October 2012	Annually
Source Protection Zones		
Environment Agency - Head Office	March 2013	Quarterly
Extreme Flooding from Rivers or Sea without Defences		
Environment Agency - Head Office	April 2013	Quarterly
Flooding from Rivers or Sea without Defences		
Environment Agency - Head Office	April 2013	Quarterly
Areas Benefiting from Flood Defences		
Environment Agency - Head Office	April 2013	Quarterly
Flood Water Storage Areas		
Environment Agency - Head Office	April 2013	Quarterly
Flood Defences		
Environment Agency - Head Office	April 2013	Quarterly
Waste	**Version**	**Update Cycle**
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites		
Environment Agency Wales - South East Area	April 2013	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - Welsh Region	October 2008	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency Wales - South East Area	April 2013	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency Wales - South East Area	April 2013	Quarterly
Local Authority Landfill Coverage		
Caerphilly County Borough Council - Environmental Health Department	May 2000	Not Applicable
Cardiff Council	May 2000	Not Applicable
Rhondda Cynon Taff County Borough Council	May 2000	Not Applicable
Vale Of Glamorgan County Borough Council	May 2000	Not Applicable
Local Authority Recorded Landfill Sites		
Caerphilly County Borough Council - Environmental Health Department	May 2000	Not Applicable
Cardiff Council	May 2000	Not Applicable
Rhondda Cynon Taff County Borough Council	May 2000	Not Applicable
Vale Of Glamorgan County Borough Council	May 2000	Not Applicable
Registered Landfill Sites		
Environment Agency Wales - South East Area	March 2003	Not Applicable
Registered Waste Transfer Sites		
Environment Agency Wales - South East Area	March 2003	Not Applicable
Registered Waste Treatment or Disposal Sites		
Environment Agency Wales - South East Area	March 2003	Not Applicable

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	March 2013	Bi-Annually
Explosive Sites		
Health and Safety Executive	March 2013	Bi-Annually
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements		
Caerphilly County Borough Council - Planning Department	August 2012	Annual Rolling Update
Cardiff Council - Regulatory Services	August 2012	Annual Rolling Update
Vale Of Glamorgan County Borough Council - Planning Department	January 2013	Annual Rolling Update
Rhondda Cynon Taff County Borough Council - Planning Department	November 2012	Annual Rolling Update
Planning Hazardous Substance Consents		
Caerphilly County Borough Council - Planning Department	August 2012	Annual Rolling Update
Cardiff Council - Regulatory Services	August 2012	Annual Rolling Update
Vale Of Glamorgan County Borough Council - Planning Department	January 2013	Annual Rolling Update
Rhondda Cynon Taff County Borough Council - Planning Department	November 2012	Annual Rolling Update

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology		
British Geological Survey - National Geoscience Information Service	August 1996	Not Applicable
BGS Estimated Soil Chemistry		
British Geological Survey - National Geoscience Information Service	January 2010	Variable
BGS Recorded Mineral Sites		
British Geological Survey - National Geoscience Information Service	April 2013	Bi-Annually
BGS Urban Soil Chemistry		
British Geological Survey - National Geoscience Information Service	June 2011	Variable
BGS Urban Soil Chemistry Averages		
British Geological Survey - National Geoscience Information Service	June 2011	Variable
Coal Mining Affected Areas		
The Coal Authority - Mining Report Service	January 2012	As notified
Mining Instability		
Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain		
British Geological Survey - National Geoscience Information Service	February 2011	Not Applicable
Potential for Collapsible Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Compressible Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Ground Dissolution Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Landslide Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Running Sand Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards		
British Geological Survey - National Geoscience Information Service	February 2011	Annually
Radon Potential - Radon Affected Areas		
British Geological Survey - National Geoscience Information Service	July 2011	As notified
Radon Potential - Radon Protection Measures		
British Geological Survey - National Geoscience Information Service	July 2011	As notified

Data Currency

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries		
Thomson Directories	May 2013	Quarterly
Fuel Station Entries		
Catalist Ltd - Experian	May 2013	Quarterly
Sensitive Land Use	**Version**	**Update Cycle**
Areas of Adopted Green Belt		
Cardiff Council	May 2013	As notified
Areas of Unadopted Green Belt		
Cardiff Council	May 2013	As notified
Areas of Outstanding Natural Beauty		
Countryside Council for Wales	May 2013	Bi-Annually
Environmentally Sensitive Areas		
The National Assembly for Wales - GI Services (Department of Planning & Countryside)	August 2008	Annually
Forest Parks		
Forestry Commission	April 1997	Not Applicable
Local Nature Reserves		
Caerphilly County Borough Council	May 2013	Bi-Annually
Cardiff Council	May 2013	Bi-Annually
Rhondda Cynon Taff County Borough Council	May 2013	Bi-Annually
Vale Of Glamorgan County Borough Council	May 2013	Bi-Annually
Marine Nature Reserves		
Countryside Council for Wales	May 2013	Bi-Annually
National Nature Reserves		
Countryside Council for Wales	May 2013	Bi-Annually
Nitrate Sensitive Areas		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	February 2012	Not Applicable
Nitrate Vulnerable Zones		
The National Assembly for Wales - GI Services (Department of Planning & Countryside)	October 2005	Annually
Ramsar Sites		
Countryside Council for Wales	May 2013	Bi-Annually
Sites of Special Scientific Interest		
Countryside Council for Wales	May 2013	Bi-Annually
Special Areas of Conservation		
Countryside Council for Wales	May 2013	Bi-Annually
Special Protection Areas		
Countryside Council for Wales	May 2013	Bi-Annually

Data Suppliers

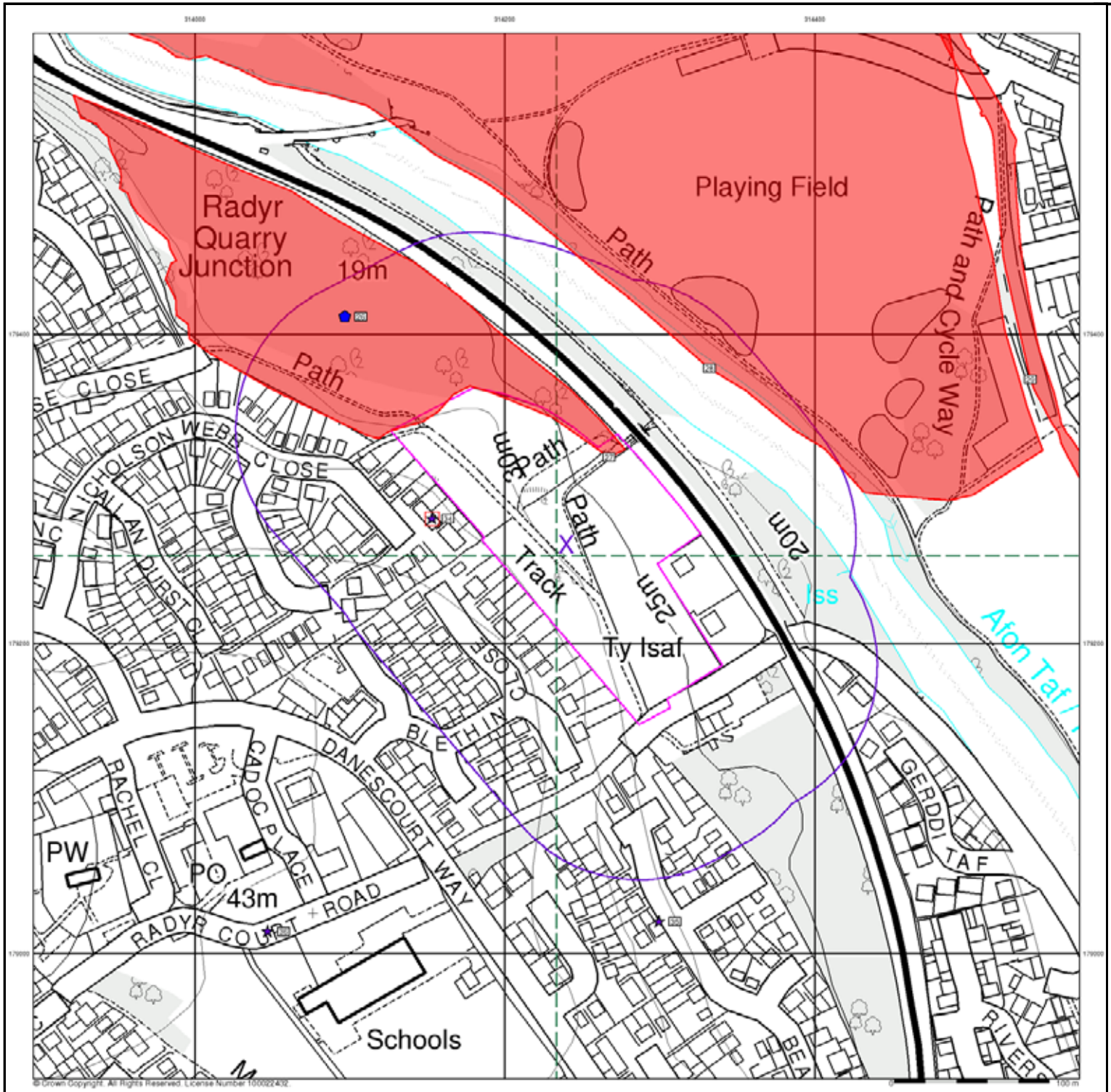
A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	
Centre for Ecology and Hydrology	
Countryside Council for Wales	
Scottish Natural Heritage	
Natural England	
Health Protection Agency	
Ove Arup	
Peter Brett Associates	

Useful Contacts

Contact	Name and Address	Contact Details
1	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 08708 506 506 Email: enquiries@environment-agency.gov.uk
2	**Cardiff Council - Pollution Control Division** Regulatory Services, City Hall, Cardiff, Mid Glamorgan, CF10 3ND	Telephone: 029 20872000 Fax: 01222 873212 Website: www.cardiff.gov.uk
3	**British Geological Survey - Enquiry Service** British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
4	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmark.co.uk Website: www.landmarkinfo.co.uk
5	**Cardiff Council** County Hall, Atlantic Wharf, Cardiff, Mid Glamorgan, CF1 5UW	Telephone: 029 2087 2000 Fax: 029 2087 3212 Website: www.cardiff.gov.uk
6	**Countryside Council for Wales** Plas Penrhose, Fford Penrhos, Bangor, Gwynedd, LL57 2LQ	Telephone: 01248 385500 Fax: 01248 355782
-	**Health Protection Agency - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@hpa.org.uk Website: www.hpa.org.uk
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / SEPA have a charging policy in place for enquiries.



Intégral Géotechnique

General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Map ID
Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Geological

- BGS Recorded Mineral Site

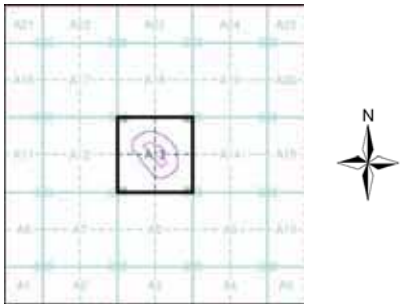
Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

Site Sensitivity Map - Segment A13



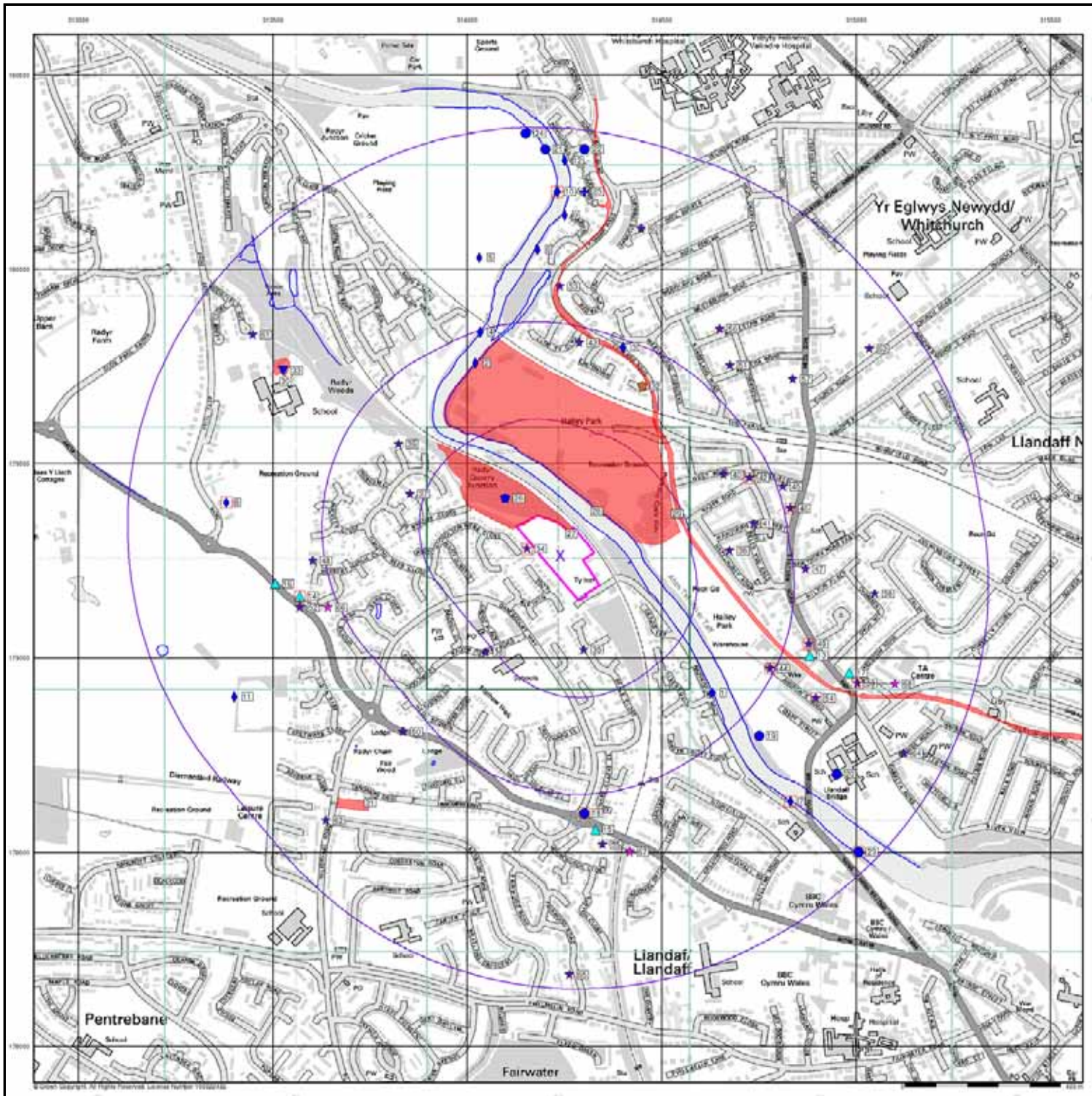
Order Details

Order Number:	47708148_1_1
Customer Ref:	11213
National Grid Reference:	314240, 179260
Slice:	A
Site Area (Ha):	2.15

Site Details

Radyr Court Road, CARDIFF

Landmark
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Intégral Géotechnique

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
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- Substantiated Pollution Incident Register
- Water Abstraction
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Geological

- BGS Recorded Mineral Site

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

Waste

- BGS Recorded Landfill Site (Location)
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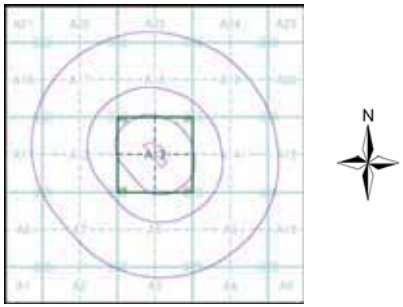
Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Site Sensitivity Map - Slice A



Order Details

Order Number:	47708148_1_1
Customer Ref:	11213
National Grid Reference:	314240, 179260
Slice:	A
Site Area (Ha):	2.15
Search Buffer (m):	1000

Site Details

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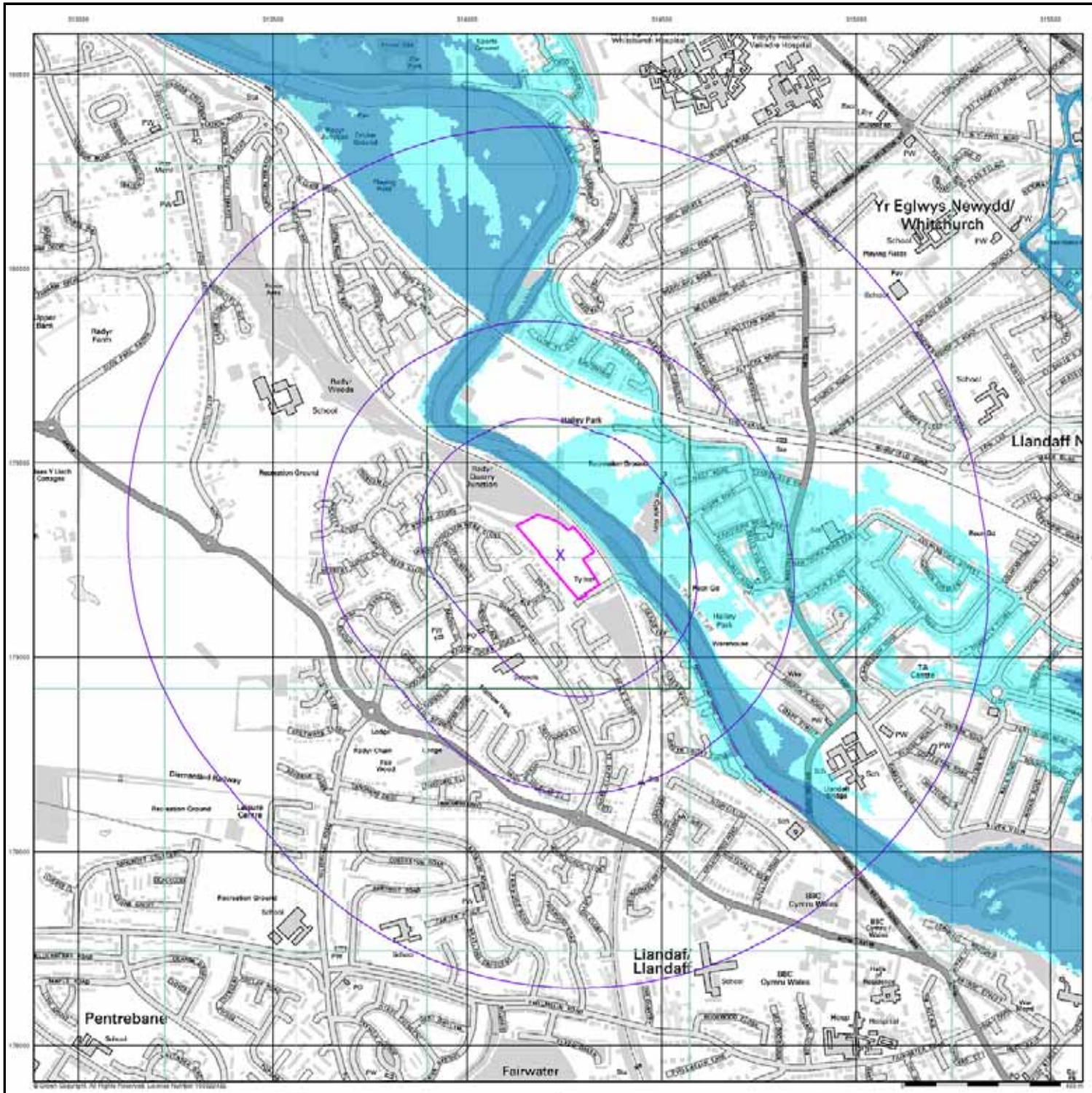


Intégral Géotechnique

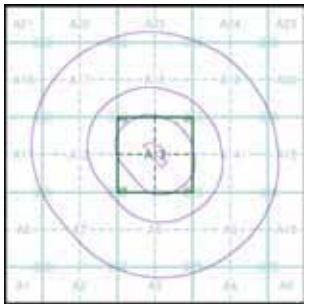
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice A



Order Details

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Customer Ref:	11213
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Slice:	A
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Search Buffer (m):	1000

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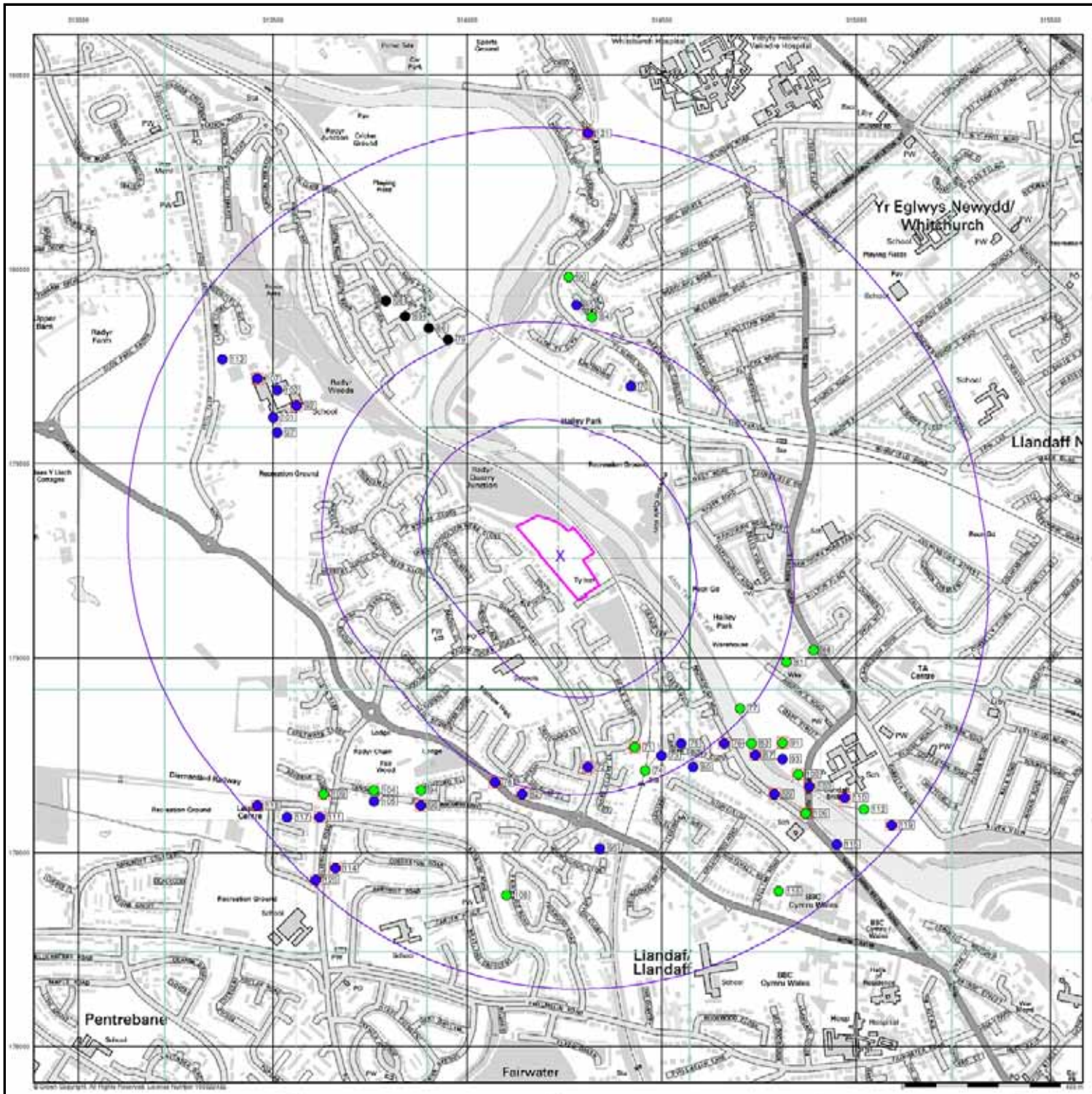


Intégral Géotechnique

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

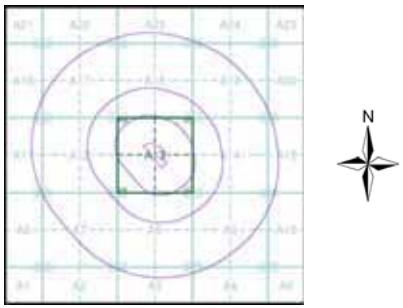
Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole datasheet which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Borehole Map - Slice A



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Search Buffer (m):	1000

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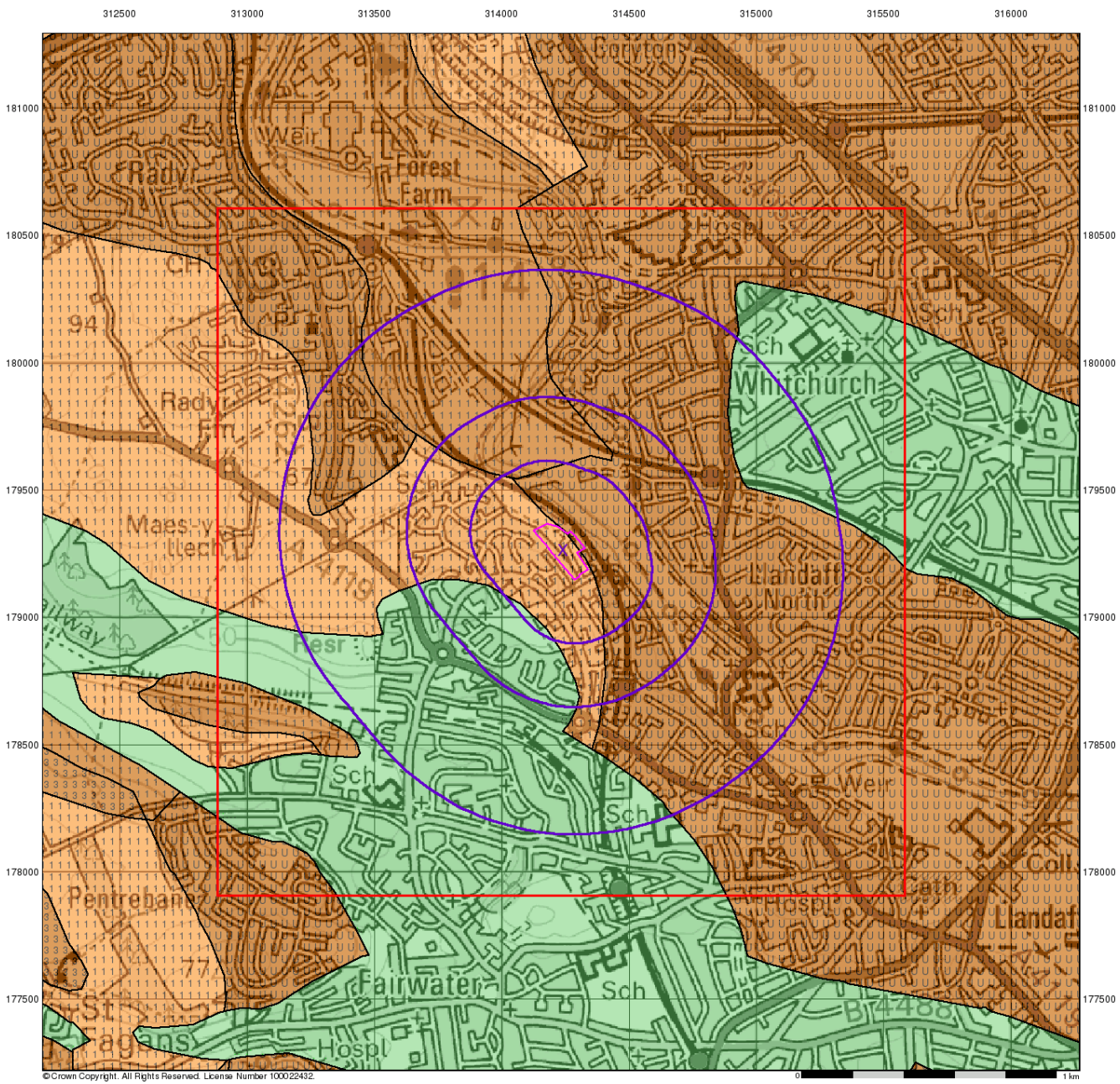


Intégral Géotechnique

Groundwater Vulnerability

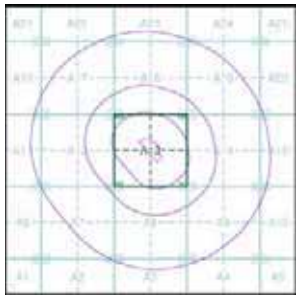
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes	Soil Classes
Major Aquifer (Highly Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Minor Aquifer (Variably Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Non Aquifer (Negligibly Permeable)	
Water or Sea	
Drift Deposit	

Site Sensitivity Context Map - Slice A



Order Details

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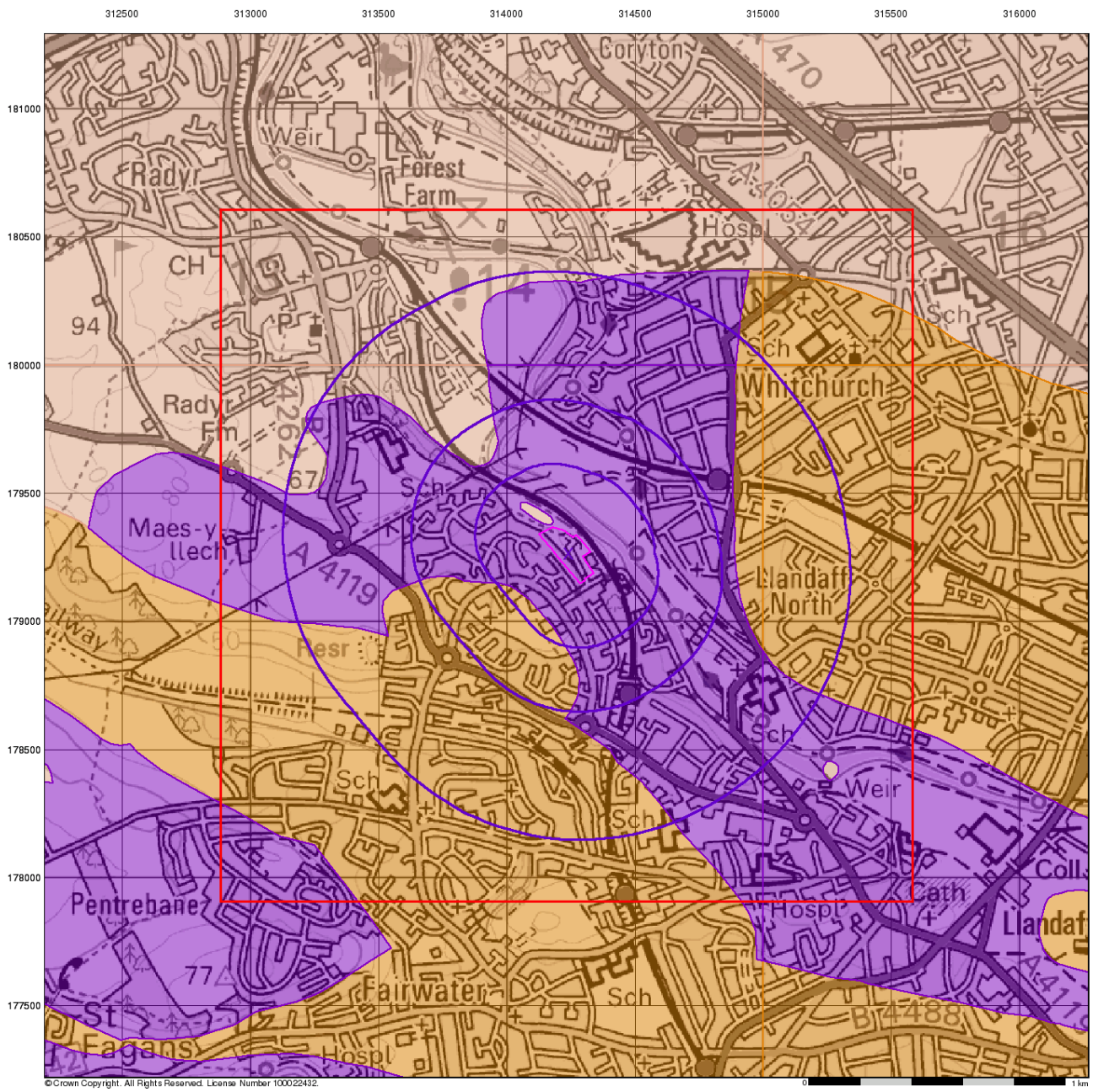


Intégral Géotechnique

Bedrock Aquifer Designation

General

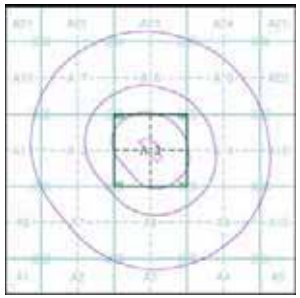
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown

Site Sensitivity Context Map - Slice A



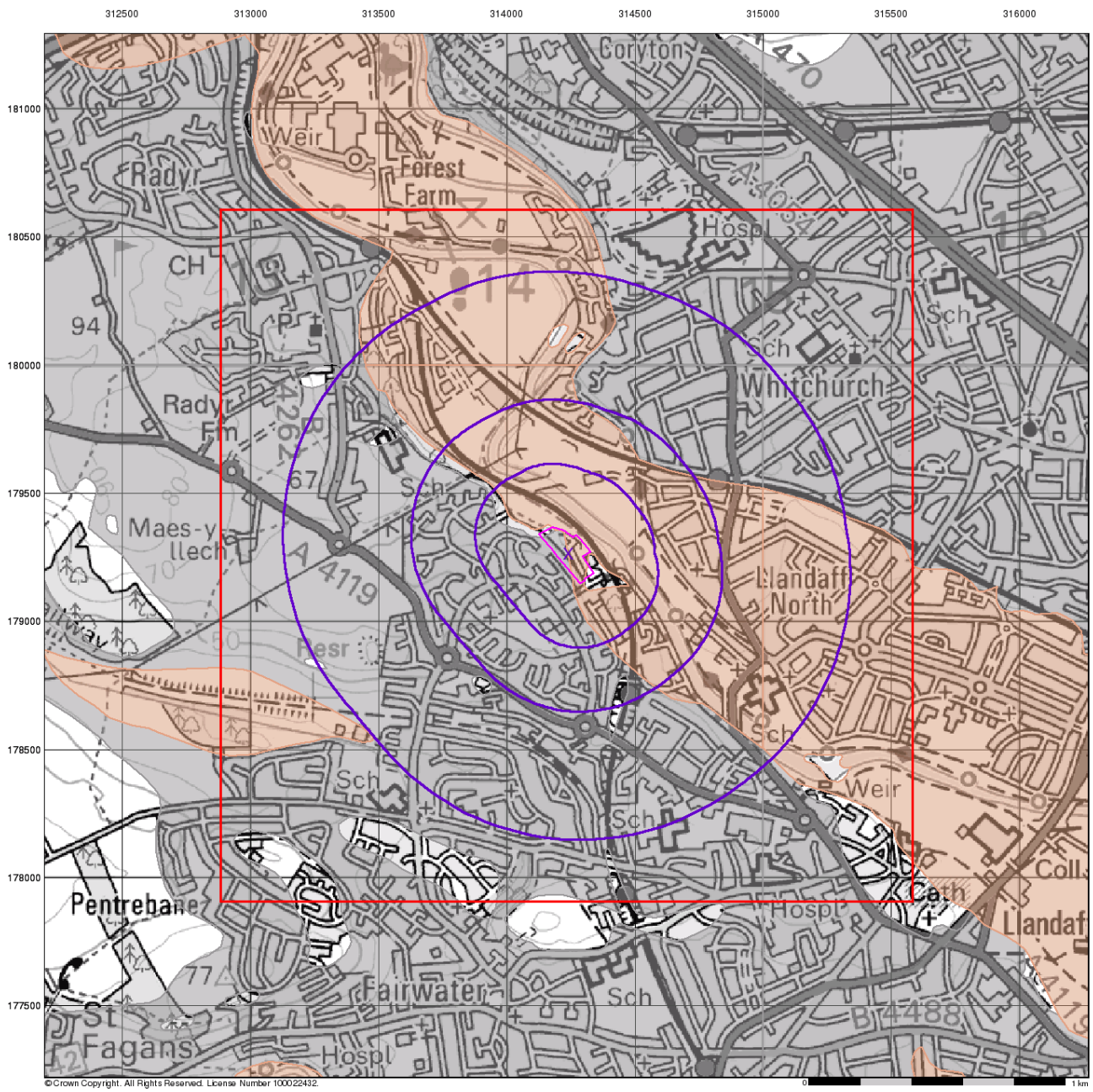
Order Details

Order Number:	47708148_1_1
Customer Ref:	11213
National Grid Reference:	314240, 179260
Slice:	A
Site Area (Ha):	2.15
Search Buffer (m):	1000

Site Details

Radyr Court Road, CARDIFF

Landmark
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Intégral Géotechnique

Superficial Aquifer Designation

General

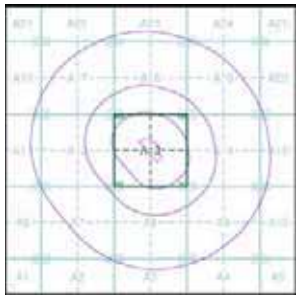
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown

Site Sensitivity Context Map - Slice A



Order Details

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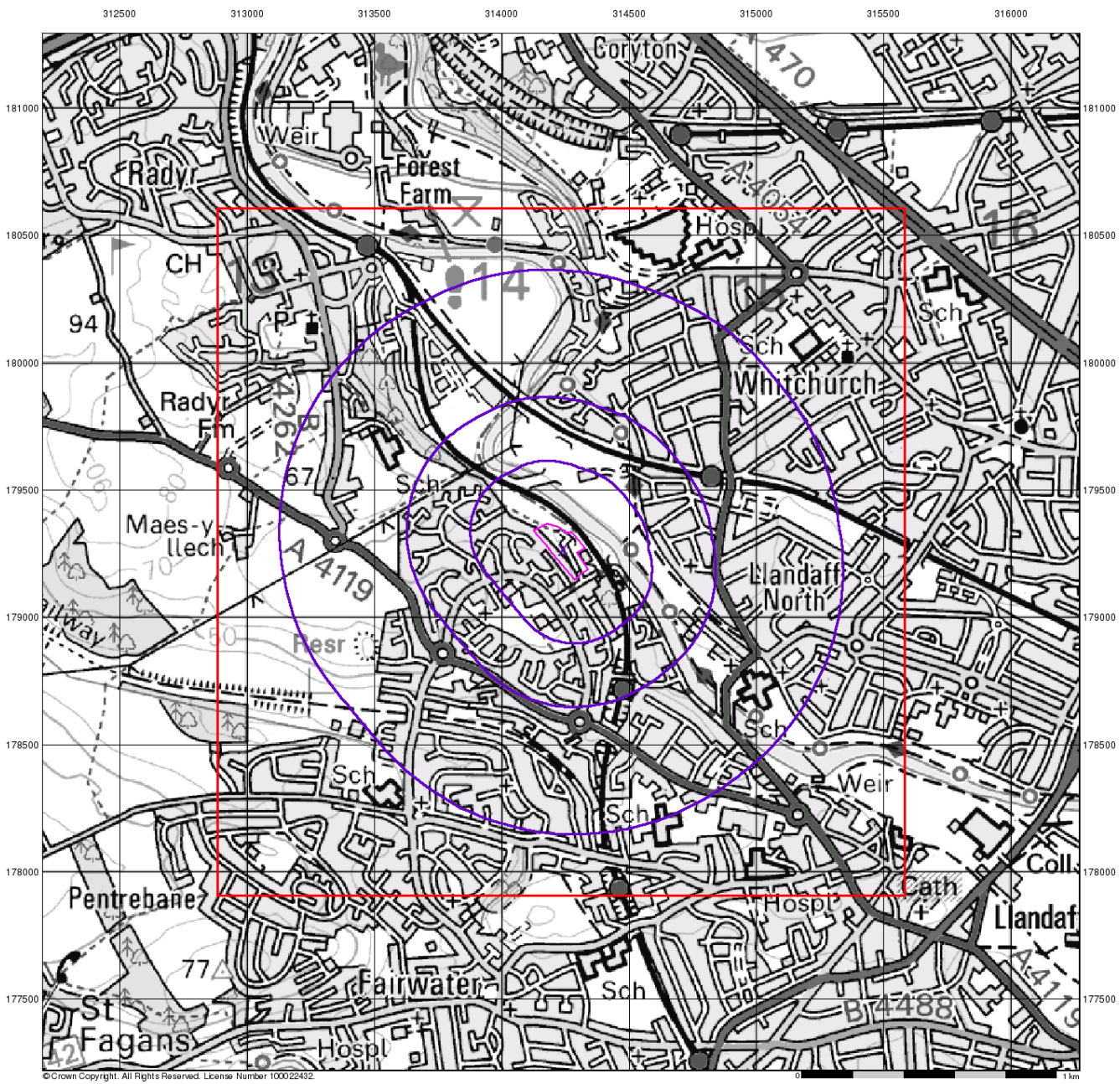


Intégral Géotechnique

Source Protection Zones

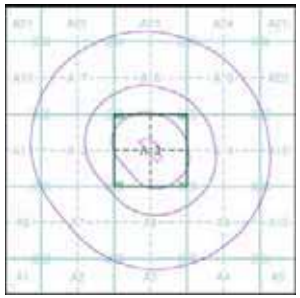
General

Specified Site | Specified Buffer(s) | Bearing Reference Point
Slice | Map ID

Agency and Hydrological

Source Protection Zone I
Source Protection Zone II
Source Protection Zone III
Zone of Special Interest
Source Protection Zone Borehole

Site Sensitivity Context Map - Slice A



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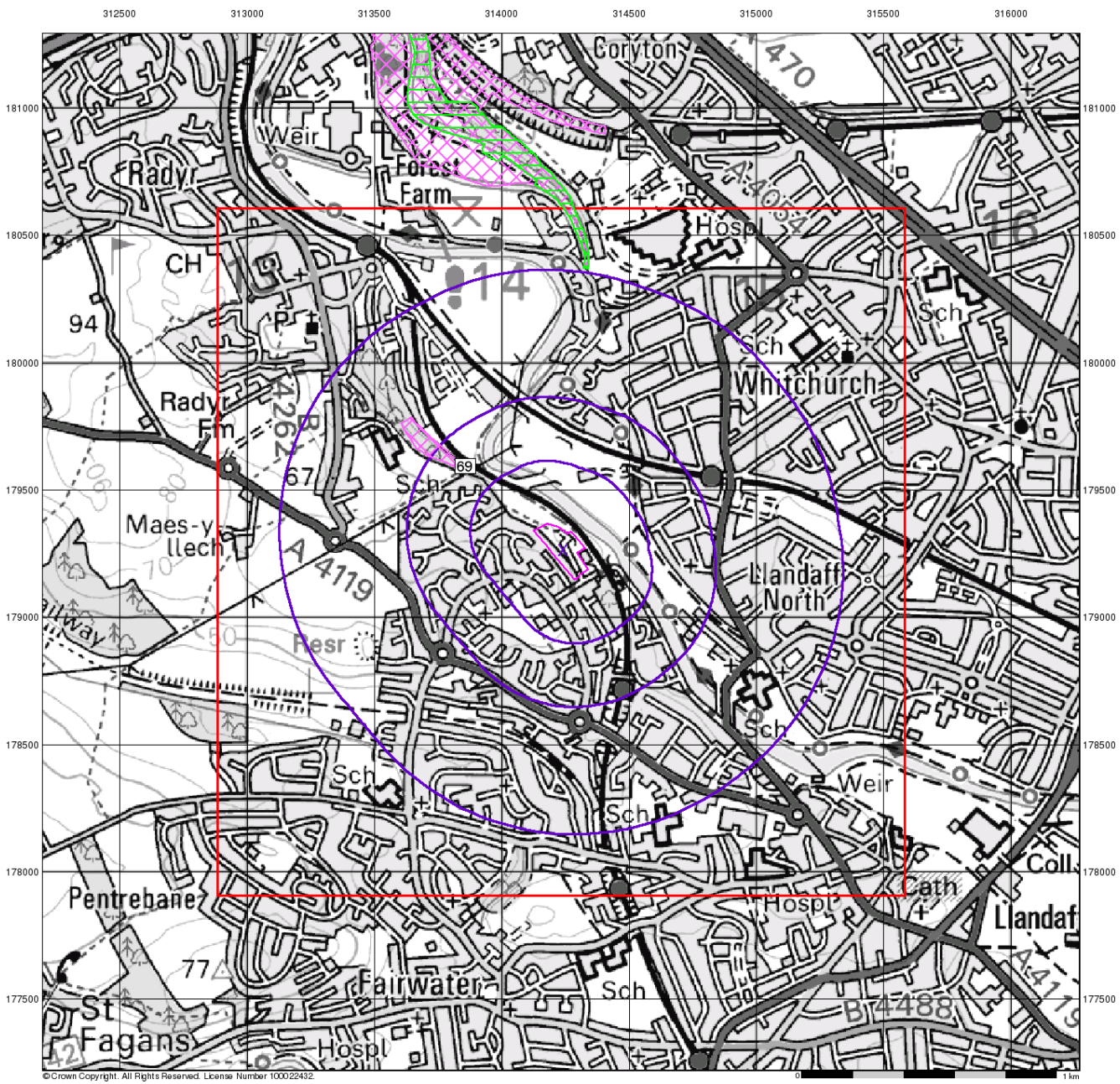


Intégral Géotechnique

Sensitive Land Uses

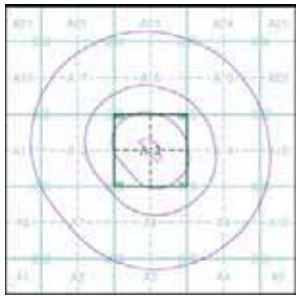
General

Specified Site | Specified Buffer(s) | Bearing Reference Point
Slice | Map ID

Sensitive Land Uses

- Area of Adopted Green Belt
- Area of Unadopted Green Belt
- Area of Outstanding Natural Beauty
- Environmentally Sensitive Area
- Forest Park
- Local Nature Reserve
- Marine Nature Reserve
- National Nature Reserve
- National Park
- Nitrate Sensitive Area
- Nitrate Vulnerable Zone
- Ramsar Site
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area

Site Sensitivity Context Map - Slice A



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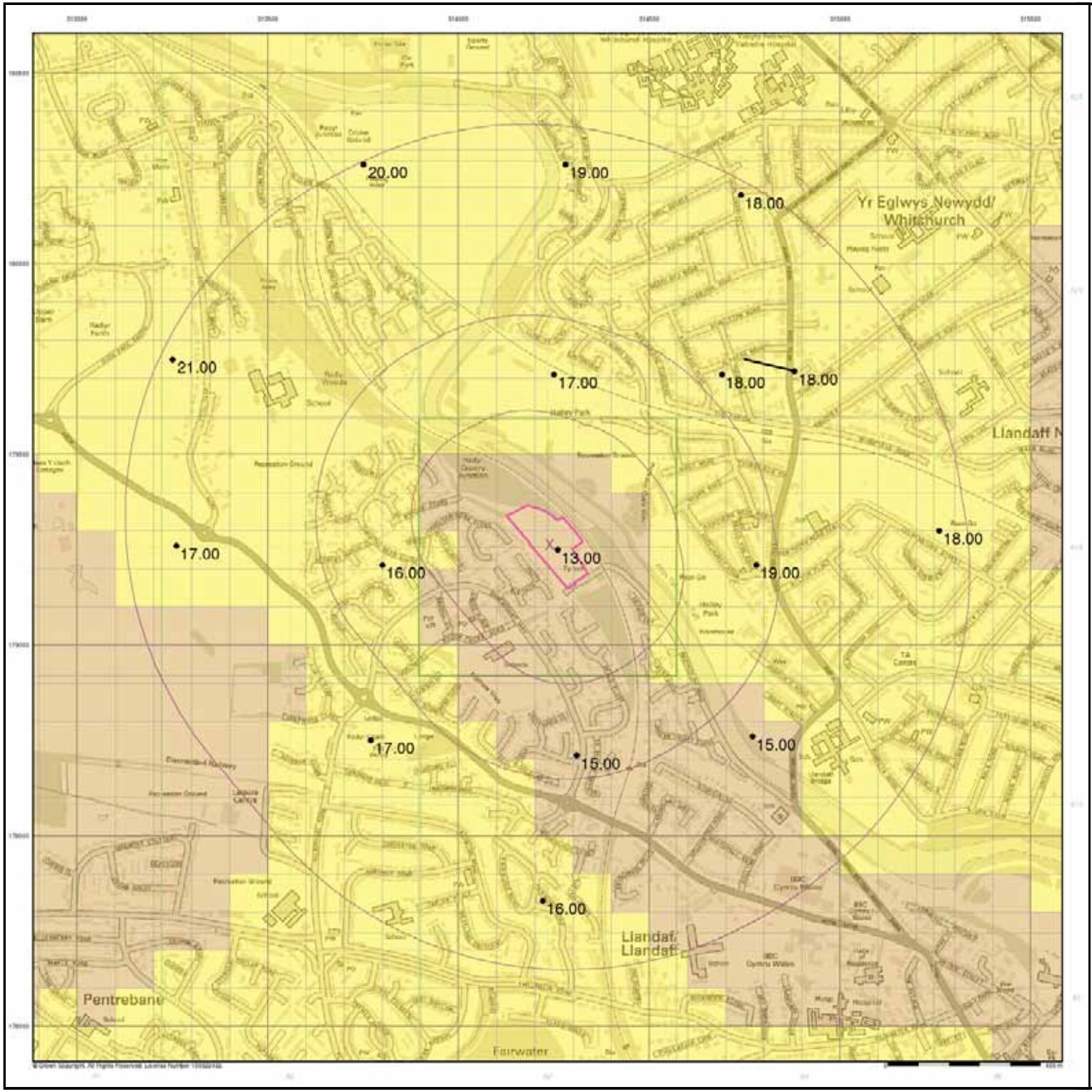


Intégral Géotechnique

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

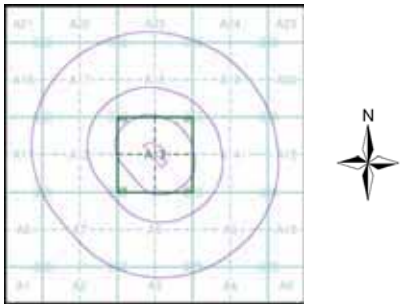
Urban Soil Chemistry Arsenic

● BGS Urban Soil Chemistry Measured Concentration Values (mg/kg)

Arsenic Concentrations mg/kg

- < 15
- 15 - 25
- 25 - 35
- 35 - 45
- 45 - 60
- 60 - 120
- > 120

Urban Soil Chemistry Arsenic - Slice A



Order Details

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Site Area (Ha):	2.15
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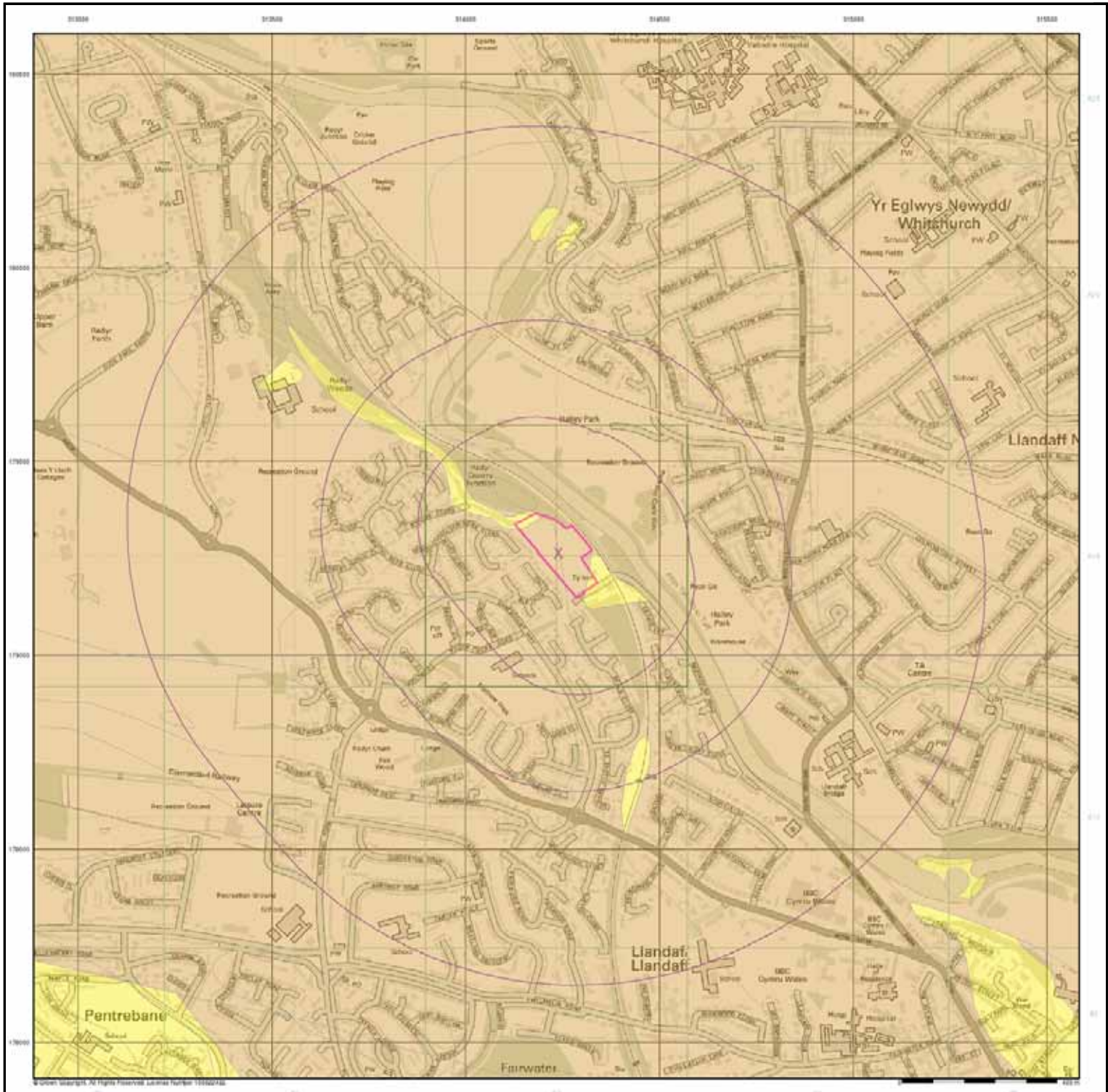


Intégral Géotechnique

General

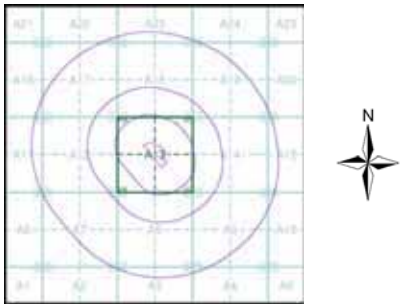
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg

- < 15
- 15 - 25
- 25 - 35
- 35 - 45
- 45 - 60
- 60 - 120
- > 120

Estimated Soil Chemistry Arsenic - Slice A



Order Details

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Slice:	A
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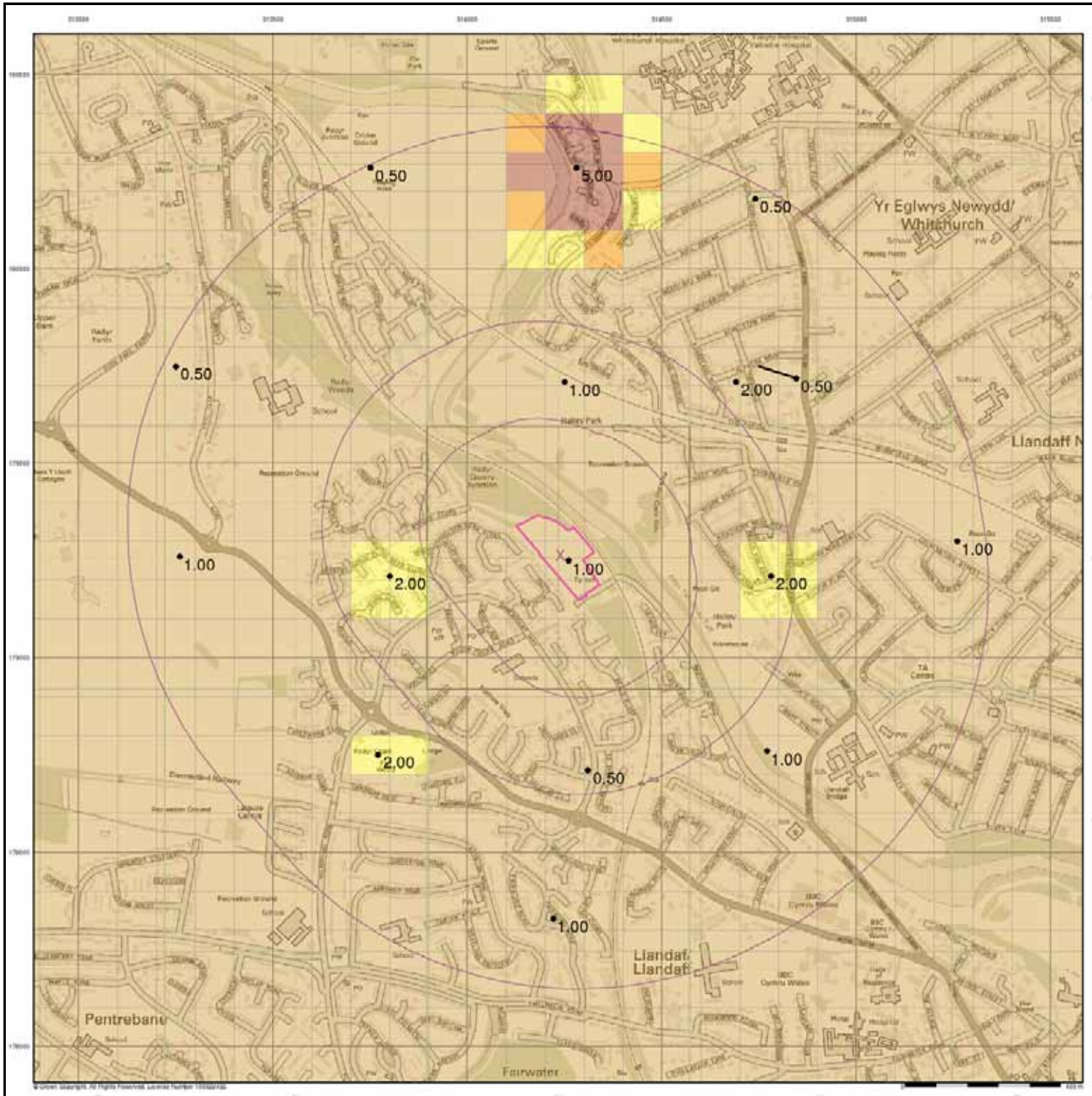


Intégral Géotechnique

General

Specified Site | Specified Buffer(s) | Bearing Reference Point

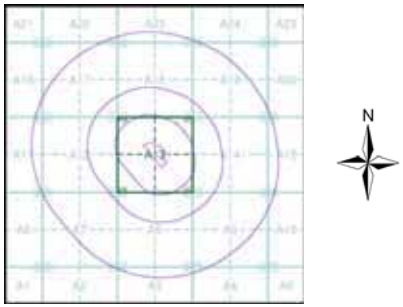
Urban Soil Chemistry Cadmium

● BGS Urban Soil Chemistry Measured Concentration Values (mg/kg)

Cadmium Concentrations mg/kg

- < 1.8
- 1.8 - 2.2
- 2.2 - 3.0
- > 3.0

Urban Soil Chemistry Cadmium - Slice A



Order Details

Order Details:	47708148_1_1
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Slice:	A
Site Area (Ha):	2.15
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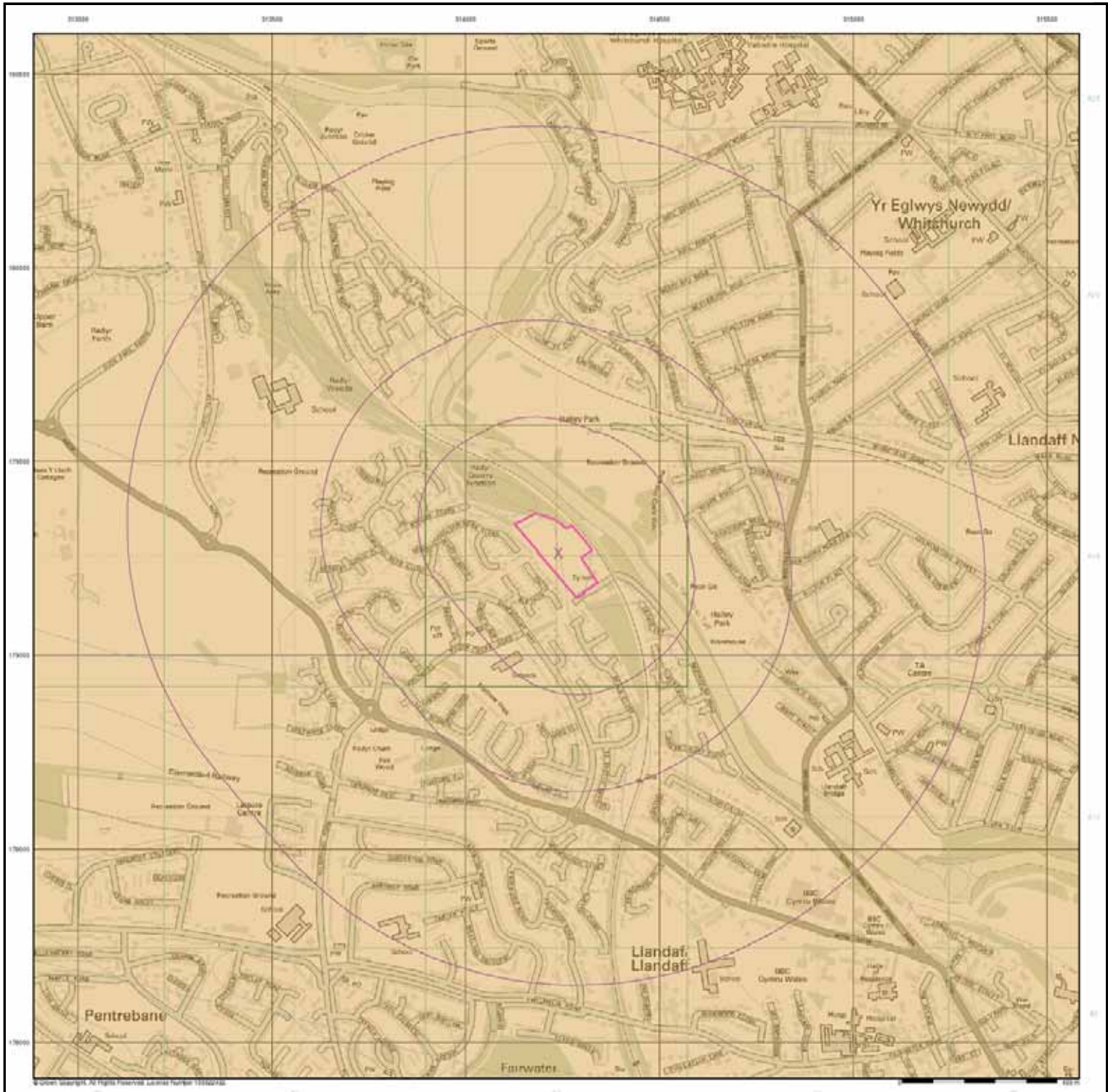
Site Details

Radyr Court Road, CARDIFF

Landmark Information Group

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Intégral Géotechnique

General

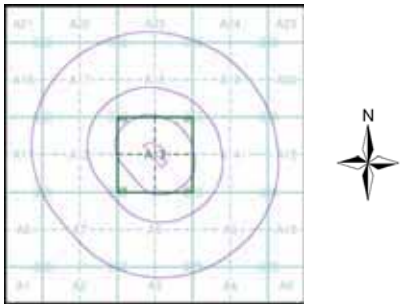
Specified Site | Specified Buffer(s) | Bearing Reference Point

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg

- < 1.8
- 1.8 - 2.2
- 2.2 - 3.0
- > 3.0

Estimated Soil Chemistry Cadmium - Slice A



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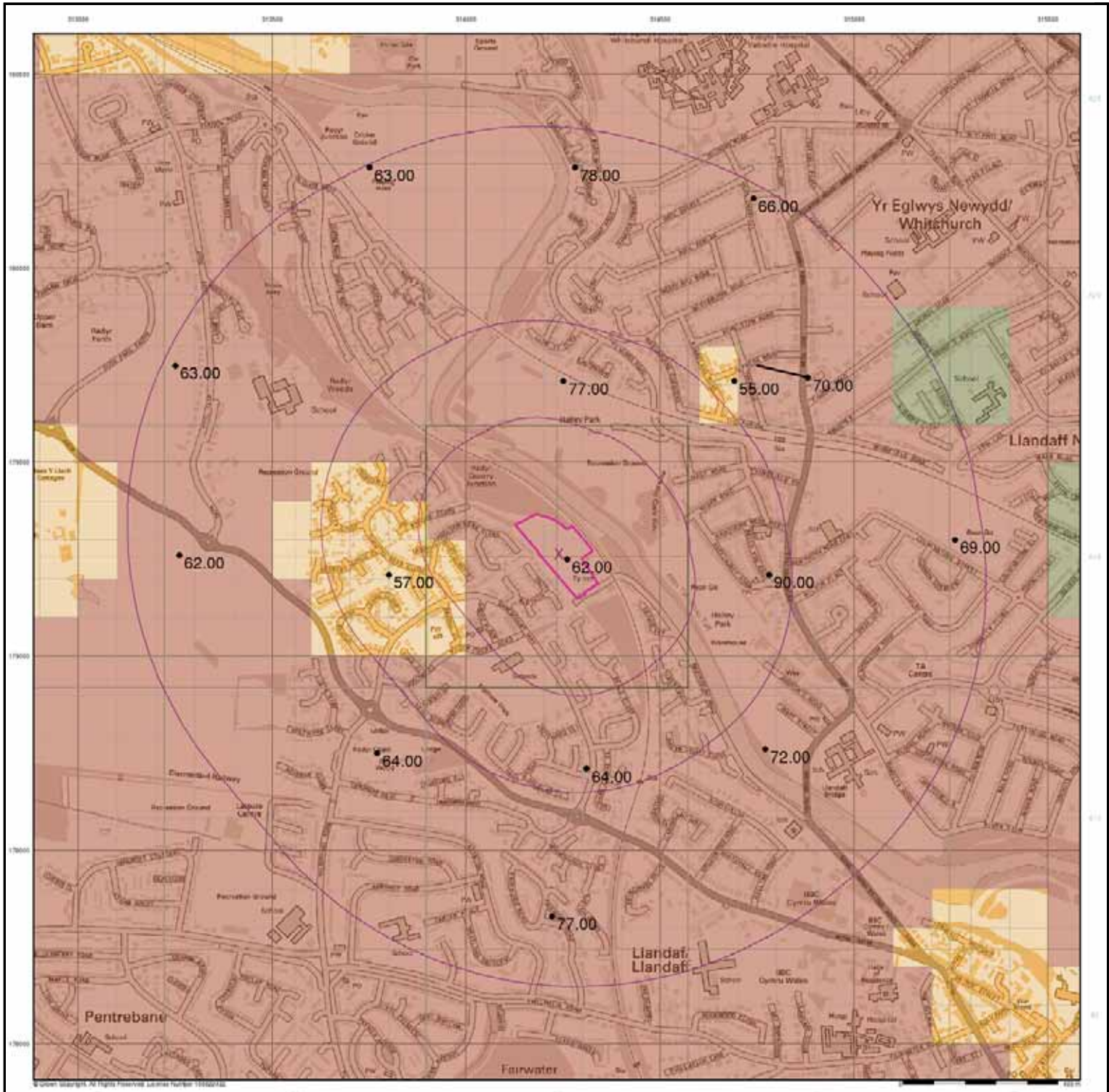


Intégral Géotechnique

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

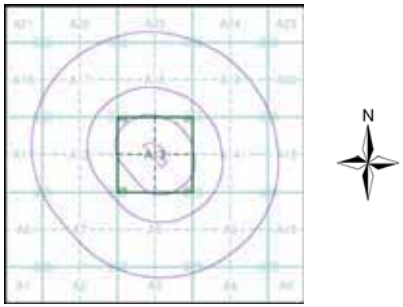
Urban Soil Chemistry Chromium

● BGS Urban Soil Chemistry Measured Concentration Values (mg/kg)

Chromium Concentrations mg/kg

- < 20
- 20 - 40
- 40 - 60
- 60 - 90
- 90 - 120
- 120 - 180
- > 180

Urban Soil Chemistry Chromium - Slice A



Order Details

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Site Details

Radyr Court Road, CARDIFF

Landmark
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Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Intégral Géotechnique

General

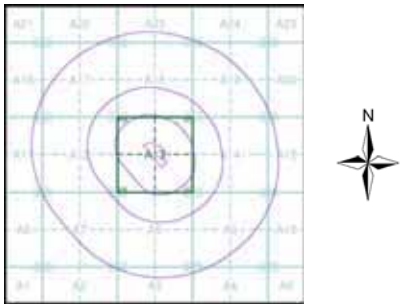
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg

- < 20
- 20 - 40
- 40 - 60
- 60 - 90
- 90 - 120
- 120 - 180
- > 180

Estimated Soil Chemistry Chromium - Slice A

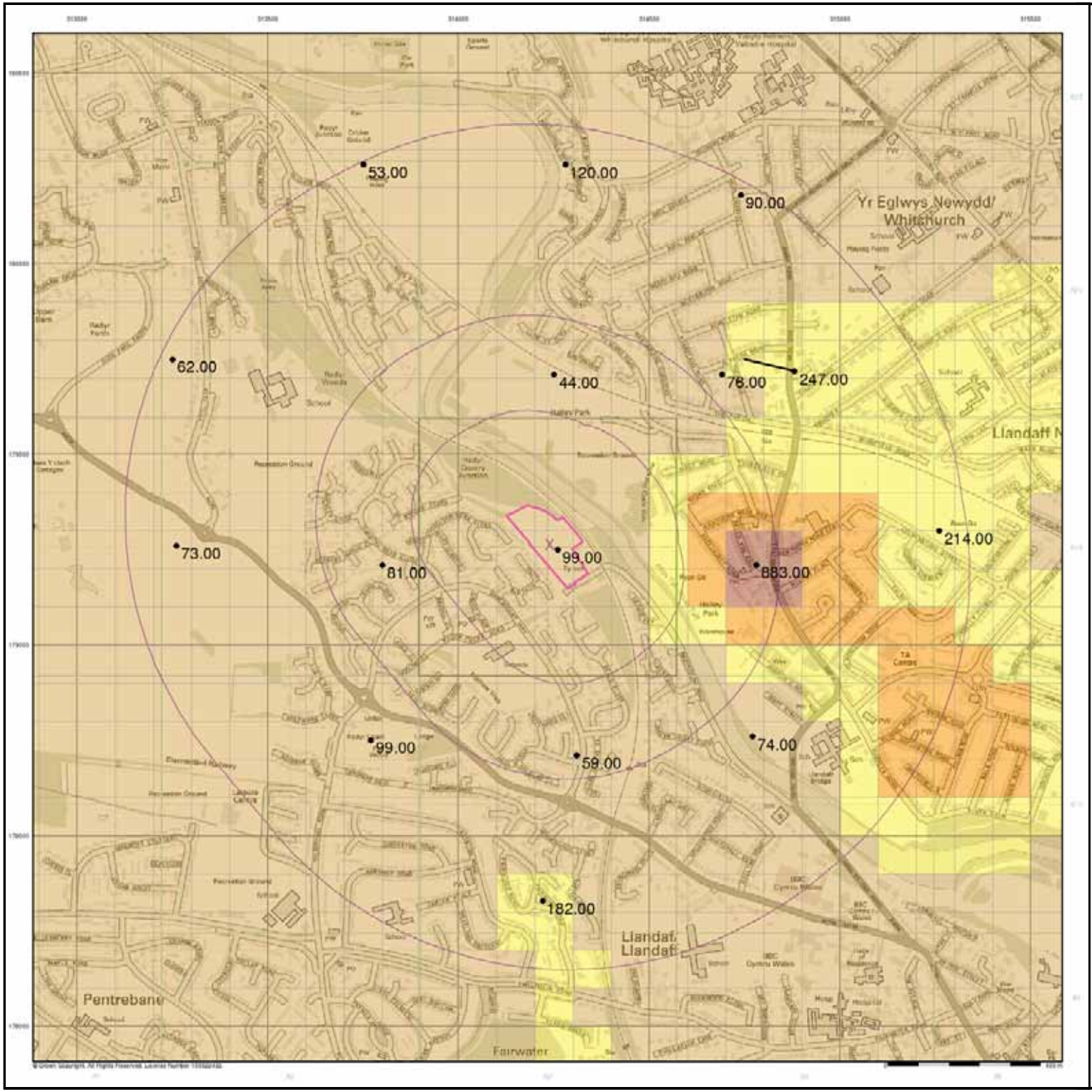


Order Details

Order Details:	47708148_1_1
Customer Ref:	11213
National Grid Reference:	314240, 179260
Slice:	A
Site Area (Ha):	2.15
Search buffer (m):	1000

Site Details

Radyr Court Road, CARDIFF



Intégral Géotechnique

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

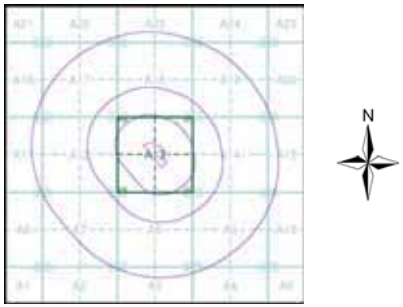
Urban Soil Chemistry Lead

BGS Urban Soil Chemistry Measured Concentration Values (mg/kg)

Lead Concentrations mg/kg

- < 150
- 150 - 300
- 300 - 600
- 600 - 900
- > 900

Urban Soil Chemistry Lead - Slice A



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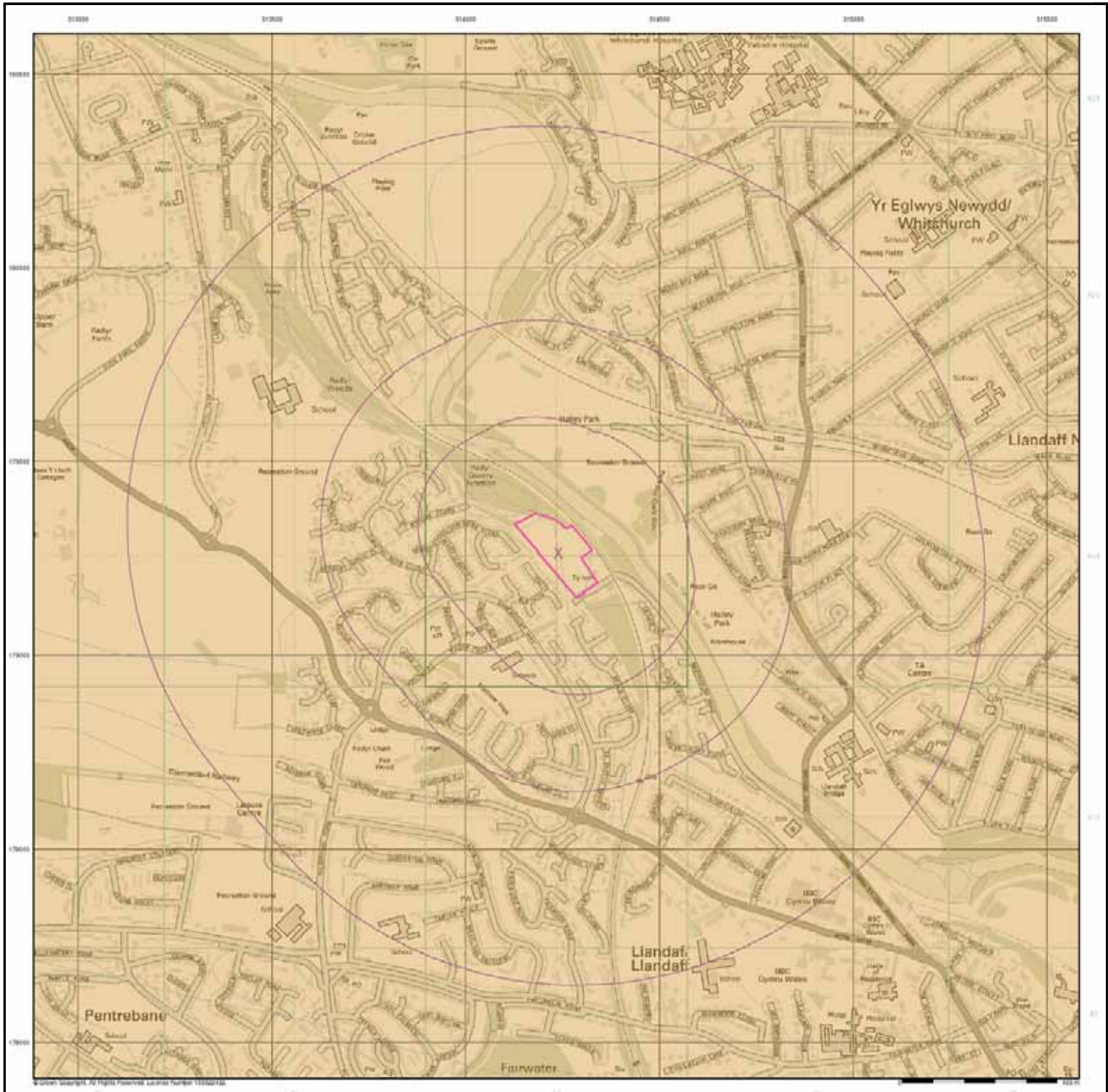


Intégral Géotechnique

General

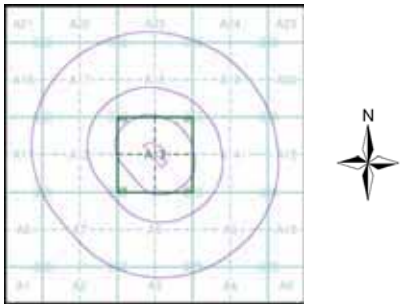
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg

- < 150
- 150 - 300
- 300 - 600
- 600 - 900
- > 900

Estimated Soil Chemistry Lead - Slice A



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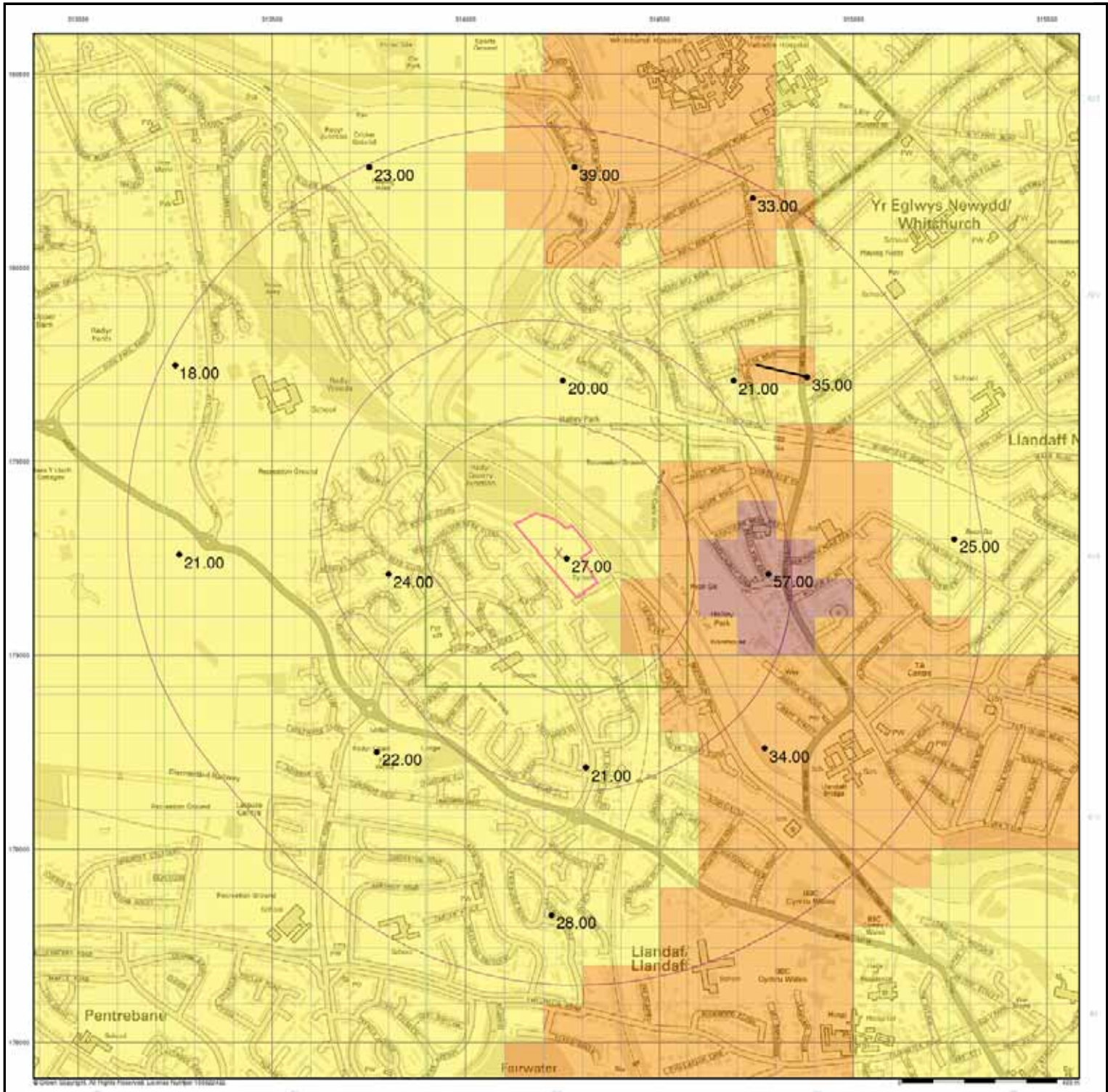


Intégral Géotechnique

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

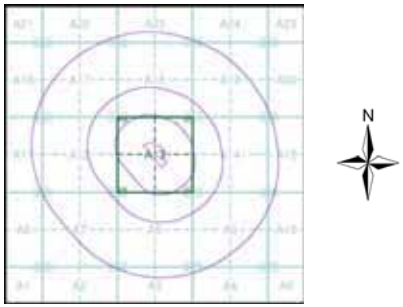
Urban Soil Chemistry Nickel

BGS Urban Soil Chemistry Measured Concentration Values (mg/kg)

Nickel Concentrations mg/kg

- < 15
- 15 - 30
- 30 - 45
- 45 - 60
- 60 - 80
- 80 - 100
- > 100

Urban Soil Chemistry Nickel - Slice A



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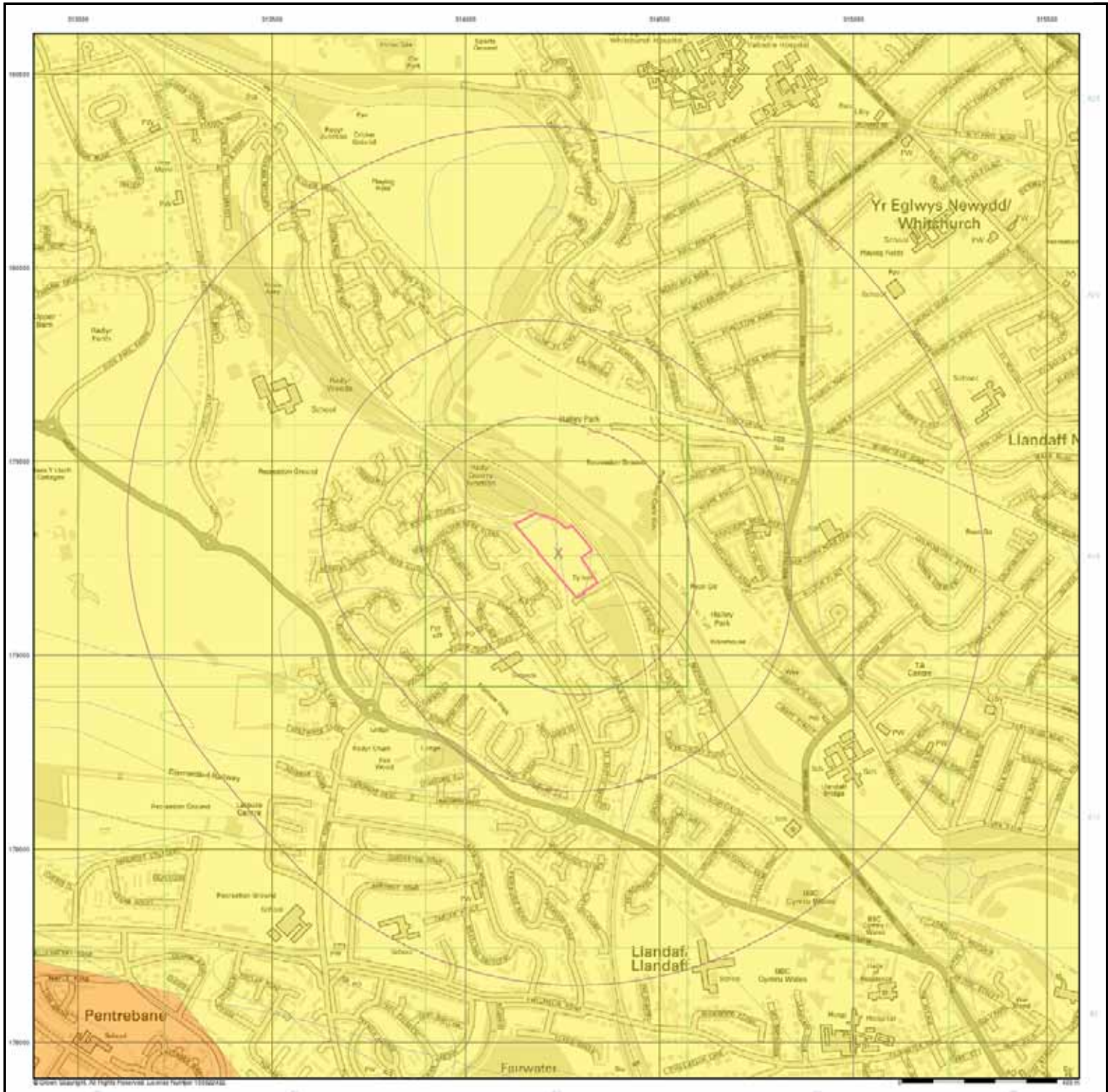
Radyr Court Road, CARDIFF



Intégral Géotechnique

General

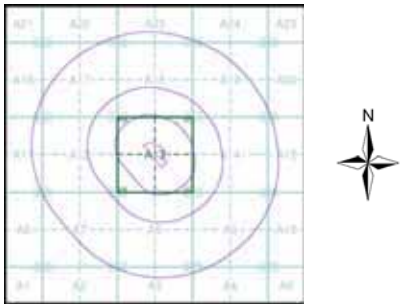
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg

- < 15
- 15 - 30
- 30 - 45
- 45 - 60
- 60 - 80
- 80 - 100
- > 100

Estimated Soil Chemistry Nickel - Slice A



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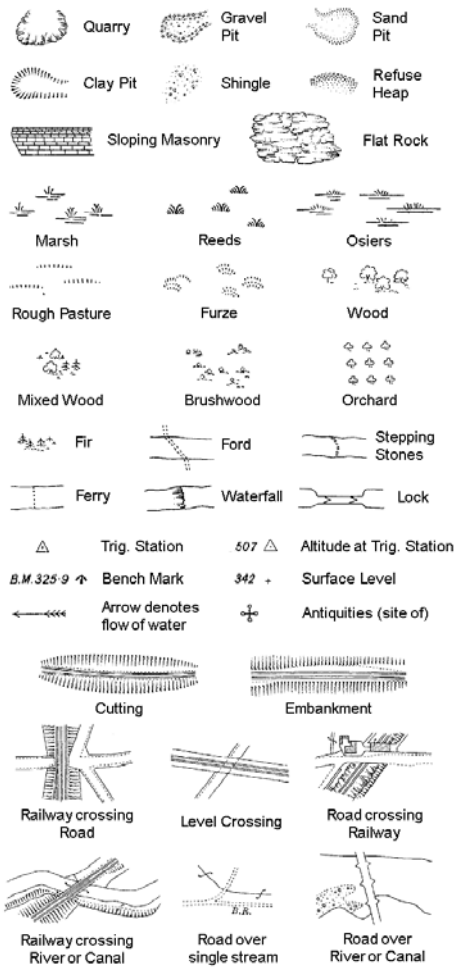
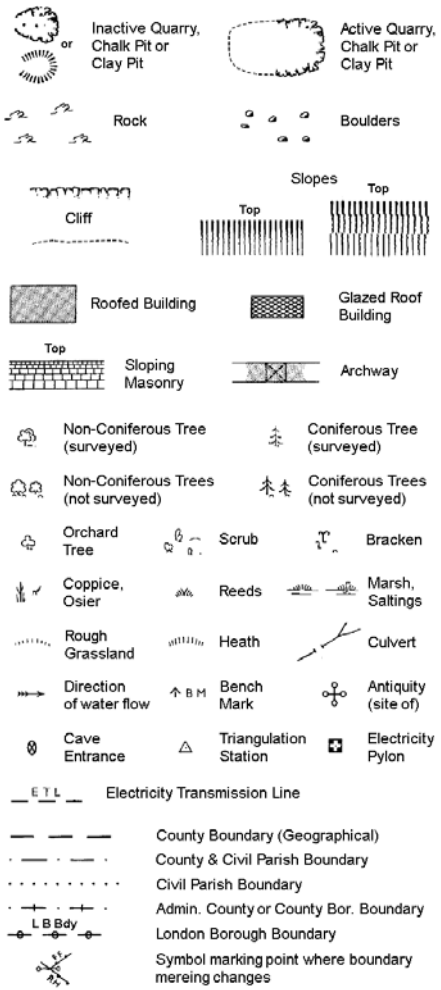
Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



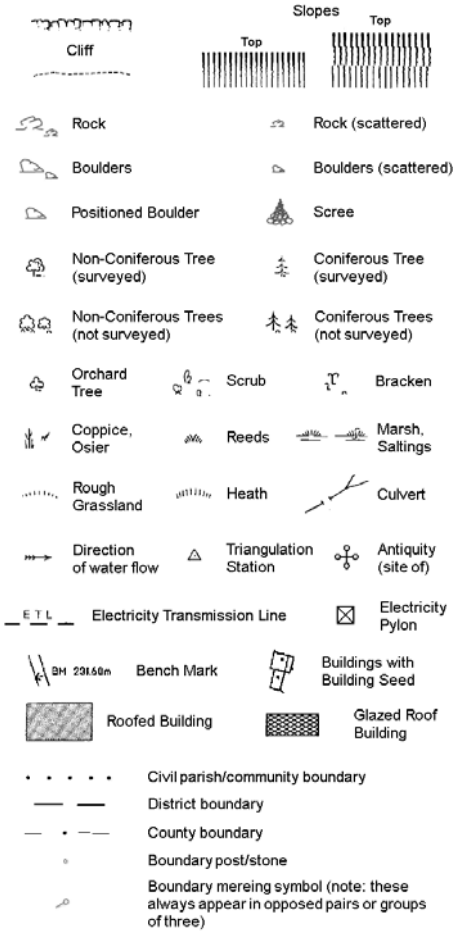
B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	St.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



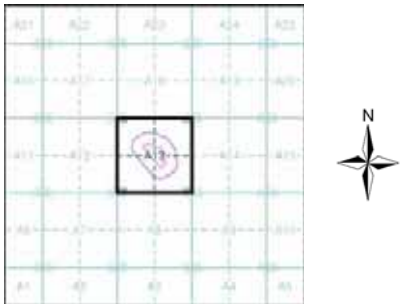
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

Intégral Géotechnique

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Glamorganshire	1:2,500	1880	2
Glamorganshire	1:2,500	1900	3
Glamorganshire	1:2,500	1920	4
Glamorganshire	1:2,500	1942	5
Ordnance Survey Plan	1:1,250	1953 - 1991	6
Additional SIMs	1:1,250	1953 - 1991	7
Ordnance Survey Plan	1:2,500	1954 - 1970	8
Ordnance Survey Plan	1:1,250	1968 - 1989	9
Ordnance Survey Plan	1:2,500	1971	10
Supply of Unpublished Survey Information	1:1,250	1973	11
Additional SIMs	1:1,250	1978 - 1989	12
Additional SIMs	1:1,250	1983 - 1985	13
Ordnance Survey Plan	1:1,250	1984 - 1989	14
Additional SIMs	1:2,500	1986	15
Additional SIMs	1:1,250	1986	16
Additional SIMs	1:2,500	1989	17
Large-Scale National Grid Data	1:1,250	1992	18
Large-Scale National Grid Data	1:1,250	1993 - 1995	19

Historical Map - Segment A13



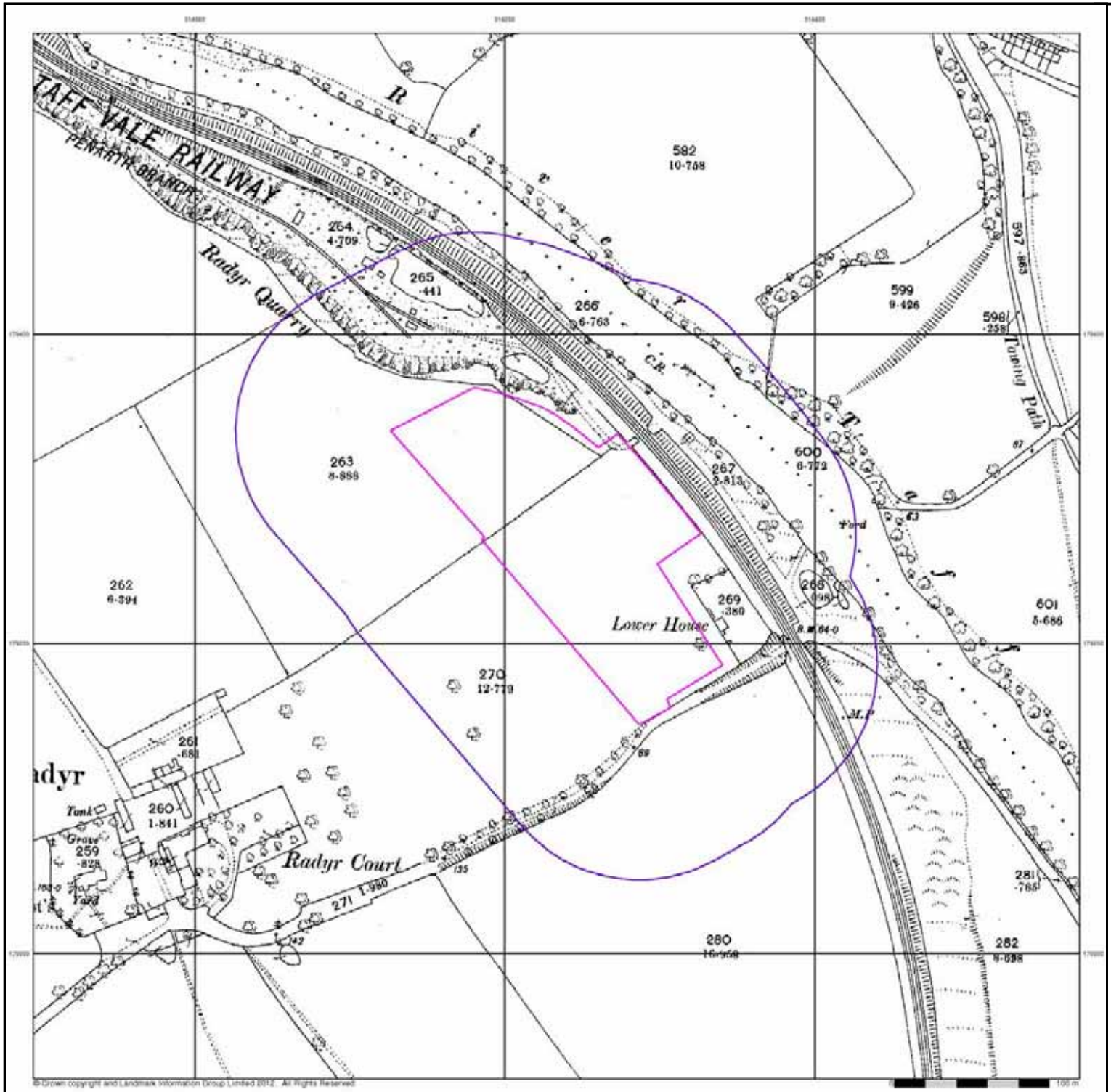
Order Details

Order Number: 47708148_1_1
Customer Ref: 11213
National Grid Reference: 314240, 179260
Slice: A
Site Area (Ha): 2.15
Search Buffer (m): 100

Site Details

Radyr Court Road, CARDIFF

Landmark
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Intégral Géotechnique

Glamorganshire

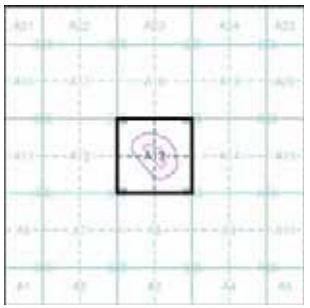
Published 1880

Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

Historical Map - Segment A13



Order Details

Order Number:	47708148_1_1
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Slice:	A
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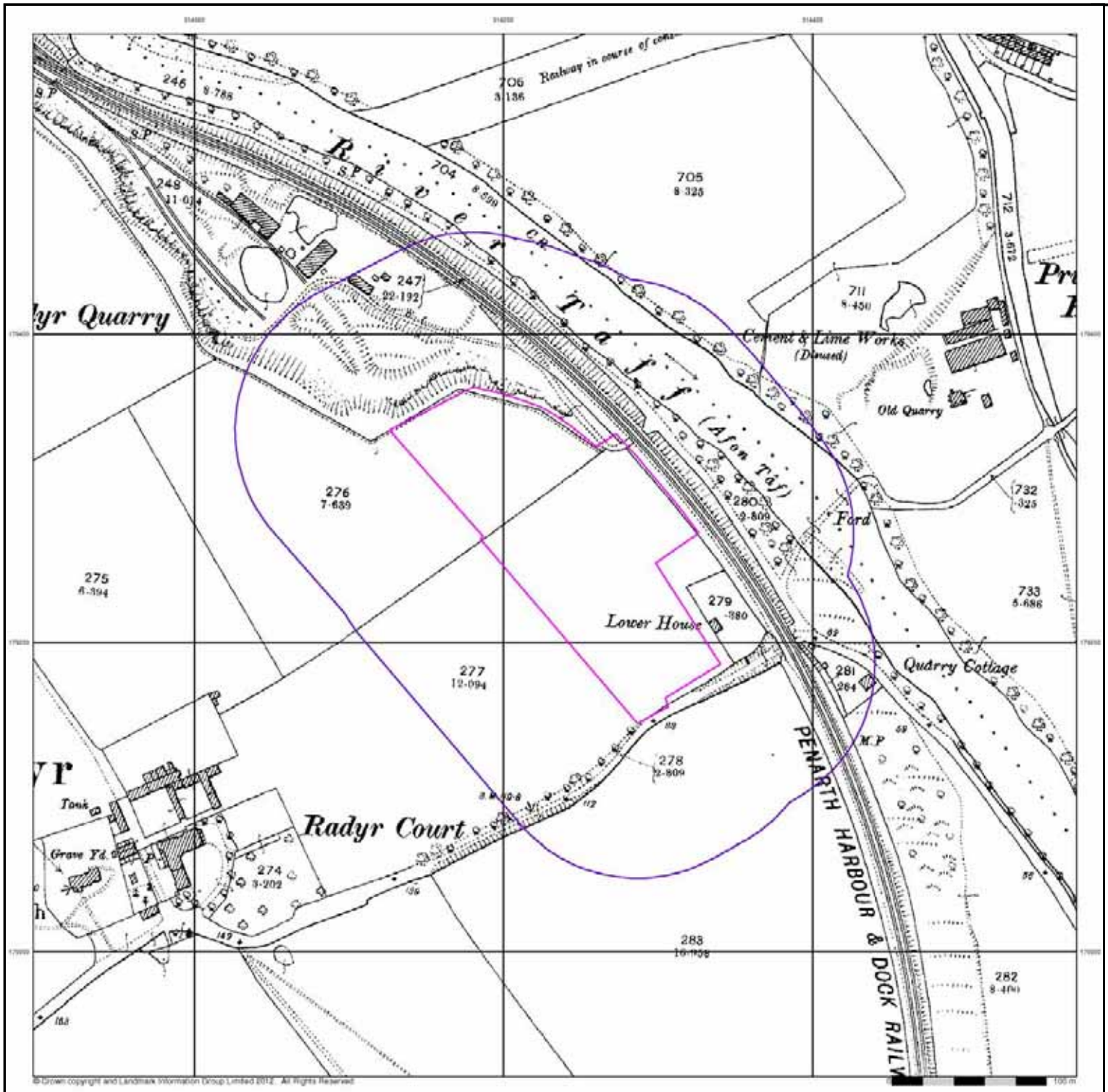

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Intégral Géotechnique

Glamorganshire

Published 1900

Source map scale - 1:2,500

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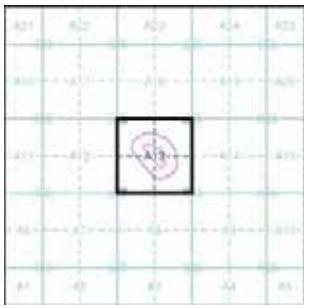
Map Name(s) and Date(s)

Historical Map - Segment A13



Order Details

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Customer Ref:	11213
National Grid Reference:	314240, 179260
Slice:	A
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Search Buffer (m):	100

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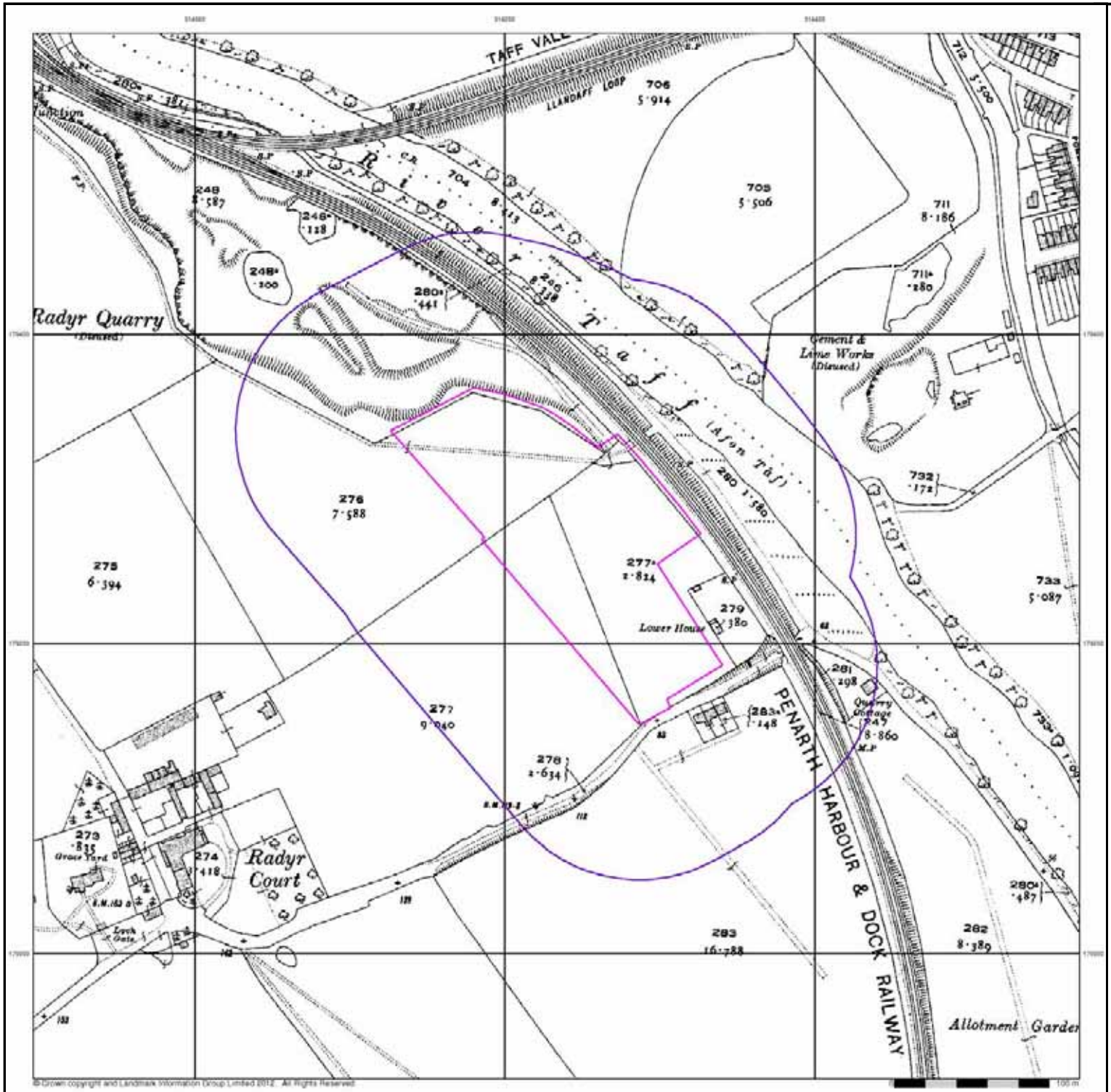

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Intégral Géotechnique

Glamorganshire

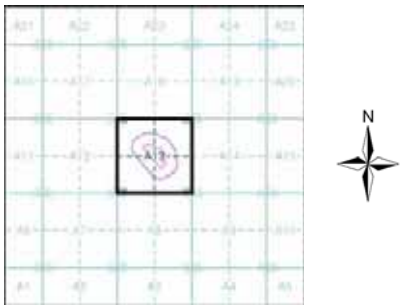
Published 1920

Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

Historical Map - Segment A13



Order Details

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Customer Ref:	11213
National Grid Reference:	314240, 179260
Slice:	A
Site Area (Ha):	2.15
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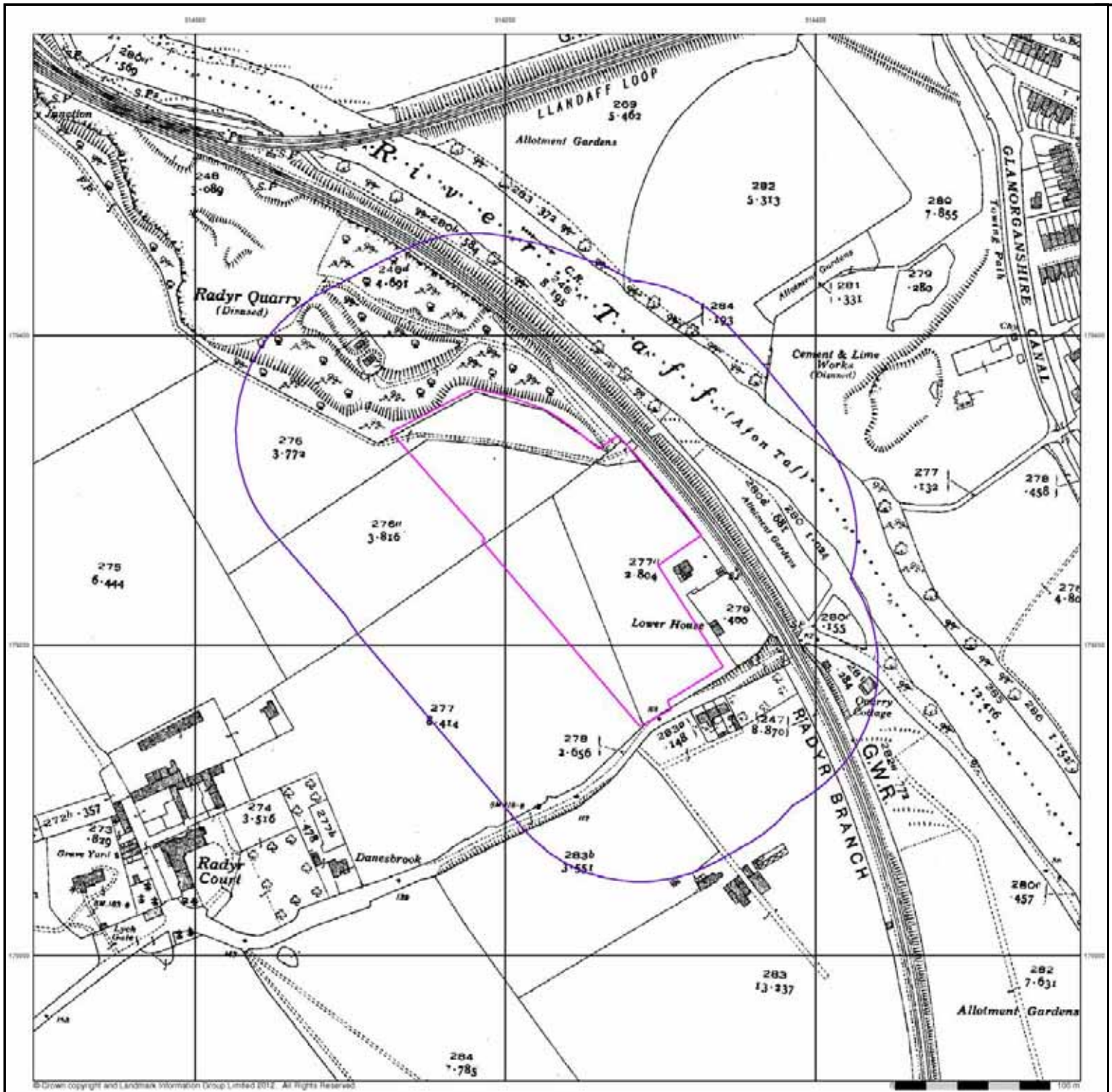

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Intégral Géotechnique

Glamorganshire

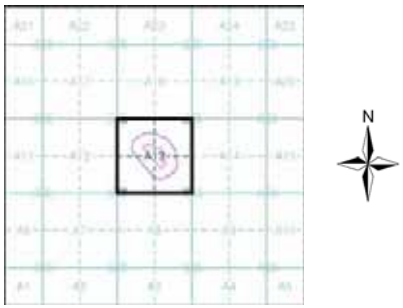
Published 1942

Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

Historical Map - Segment A13



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National Grid Reference:	314240, 179260
Slice:	A
Site Area (Ha):	2.15
Search Buffer (m):	100

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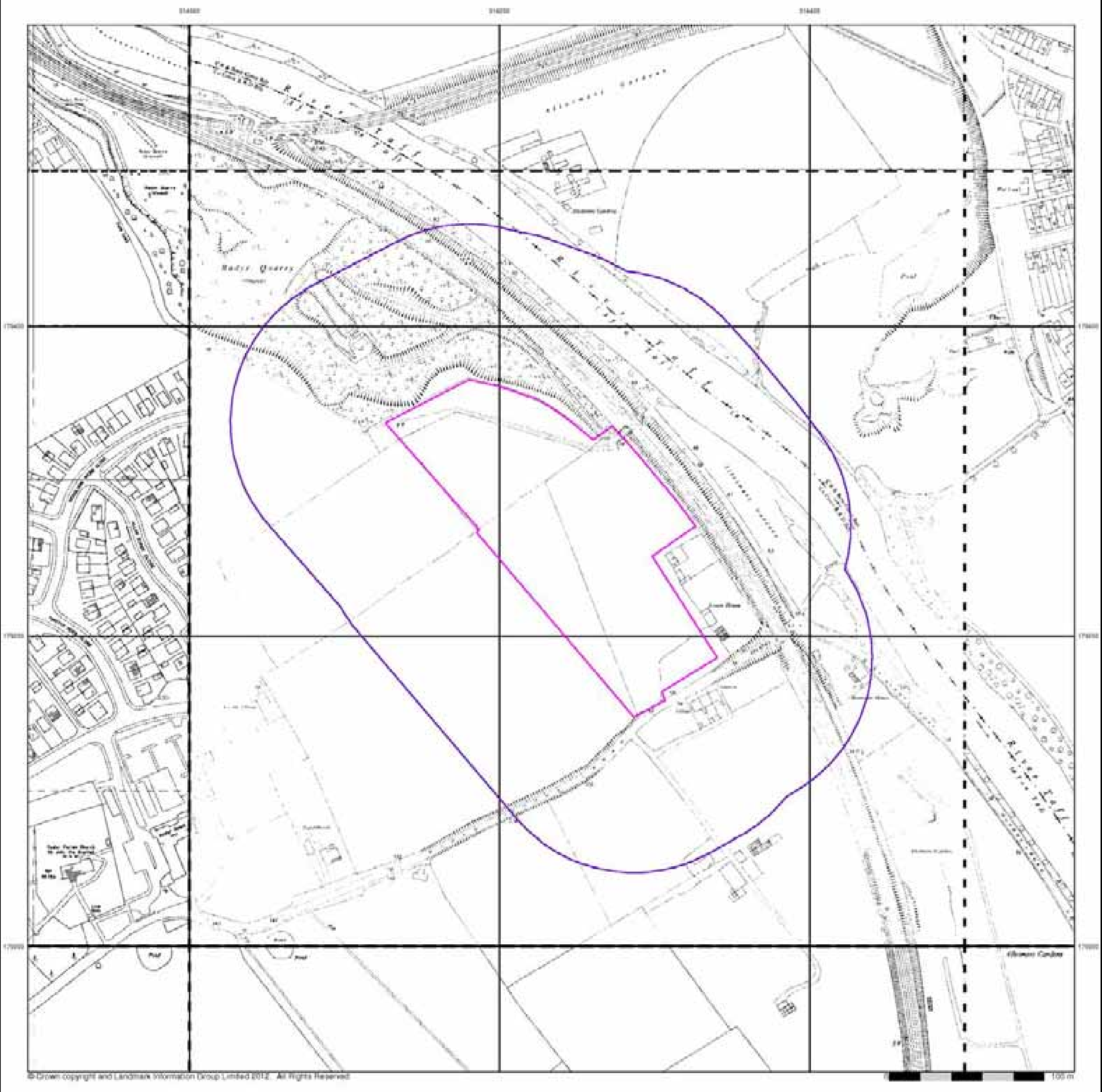

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Intégral
Géotechnique

Ordnance Survey Plan

Published 1953 - 1991

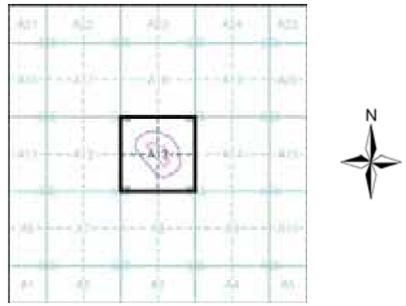
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

ST1379NE 1991 1:1,250	ST1479NW 1953 1:1,250	ST1479NE 1953 1:1,250
ST1379SE 1986 1:1,250	ST1479SW 1953 1:1,250	ST1479SE 1953 1:1,250
ST1378NE 1959 1:1,250	ST1478NW 1954 1:1,250	ST1478NE 1954 1:1,250

Historical Map - Segment A13

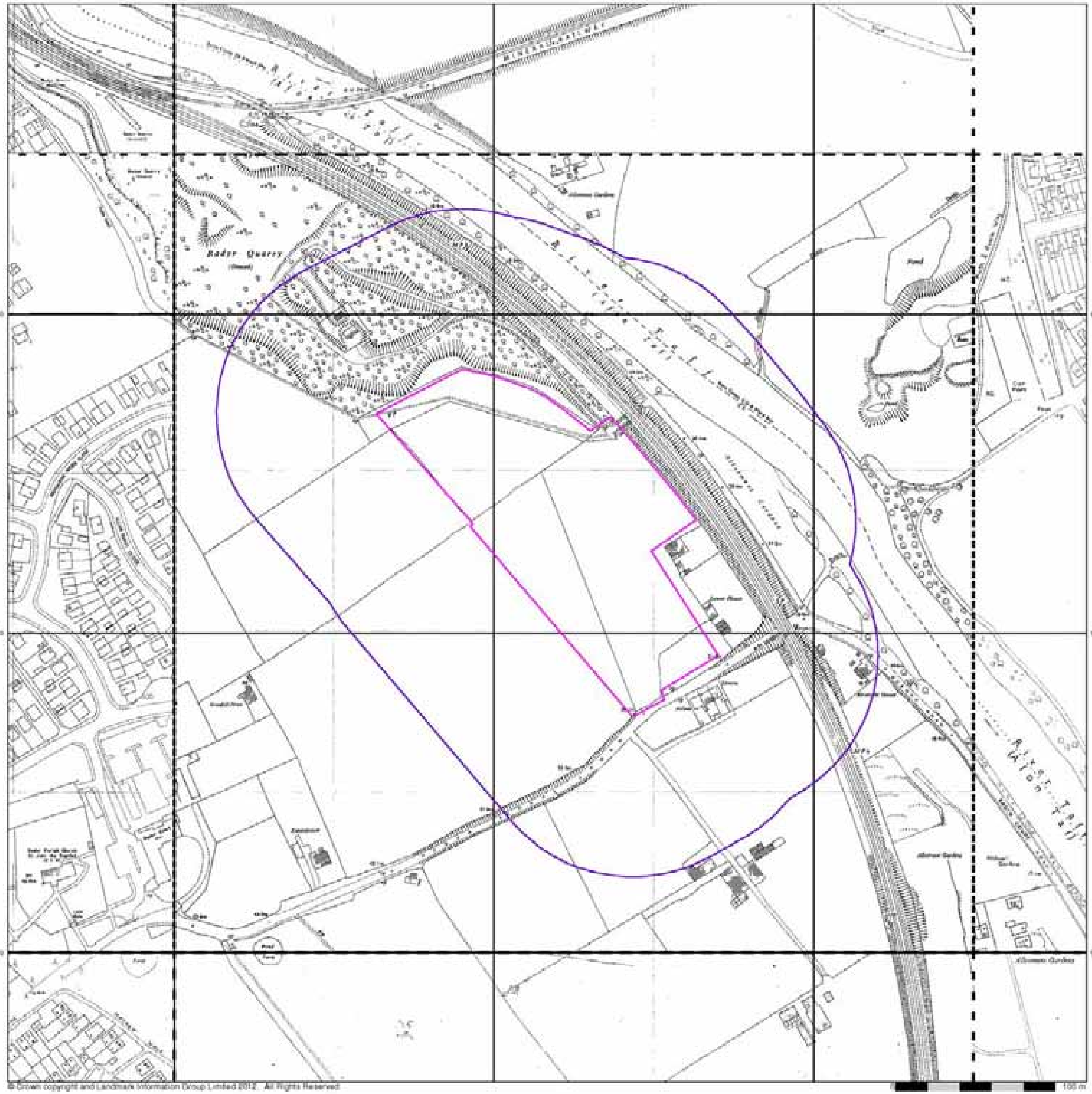


Order Details

Order Number: 47708148_1_1
Customer Ref: 11213
National Grid Reference: 314240, 179260
Slice: A
Site Area (Ha): 2.15
Search Buffer (m): 100

Site Details

Radyr Court Road, CARDIFF



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Intégral Géotechnique

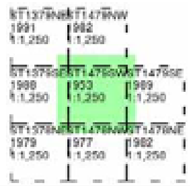
Additional SIMs

Published 1953 - 1991

Source map scale - 1:1,250

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



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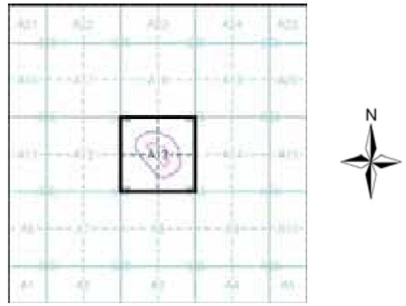

Order Details

Order Number: 47708148_1_1
Customer Ref: 11213
National Grid Reference: 314240, 179260
Slice: A
Site Area (Ha): 2.15
Search Buffer (m): 100

Site Details

Radyr Court Road, CARDIFF

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Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

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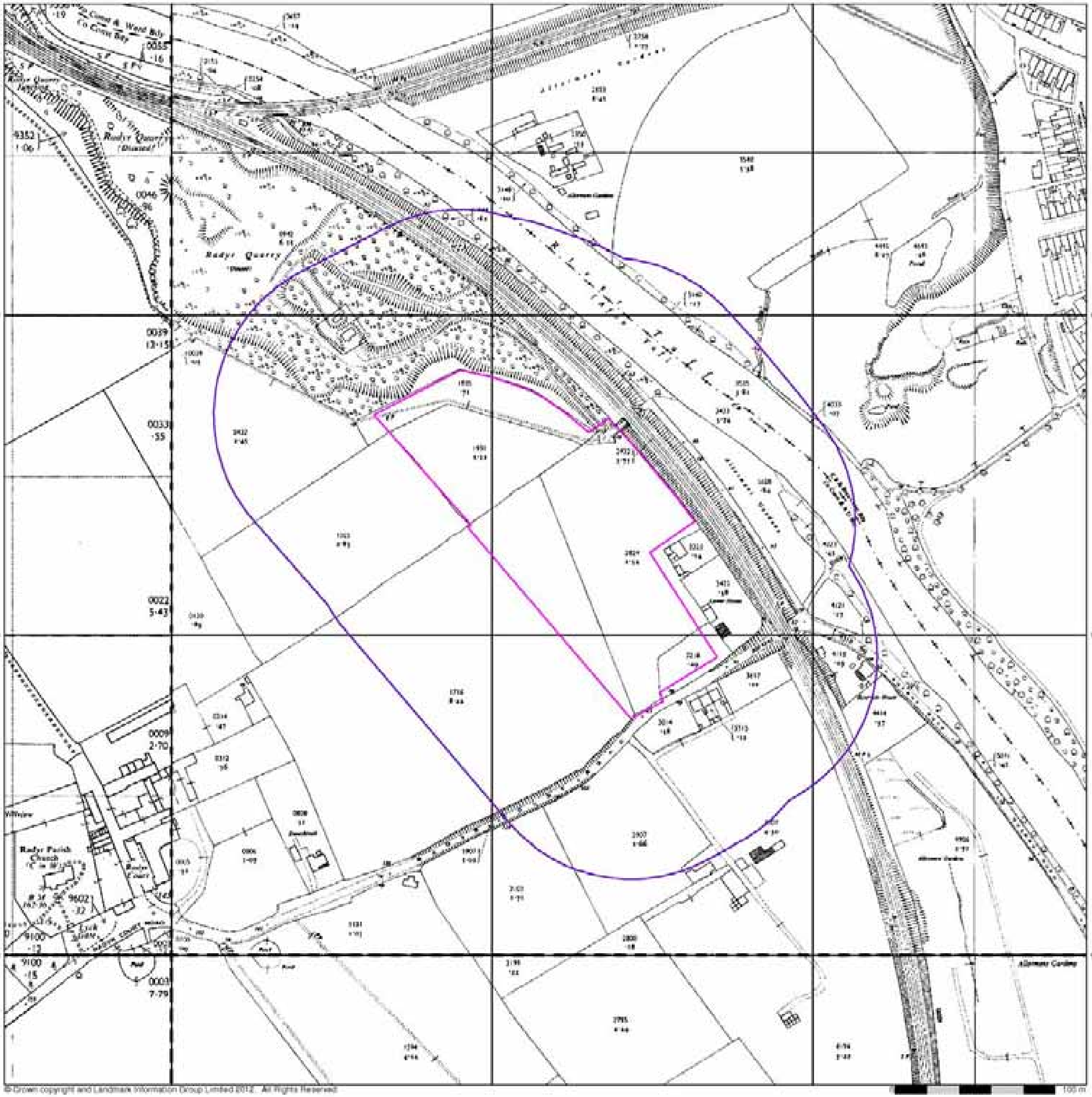


Intégral
Géotechnique

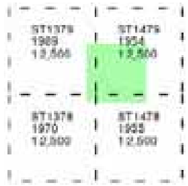
Ordnance Survey Plan

Published 1954 - 1970

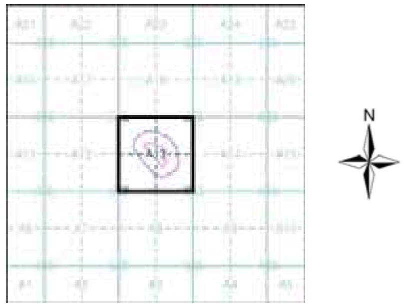
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

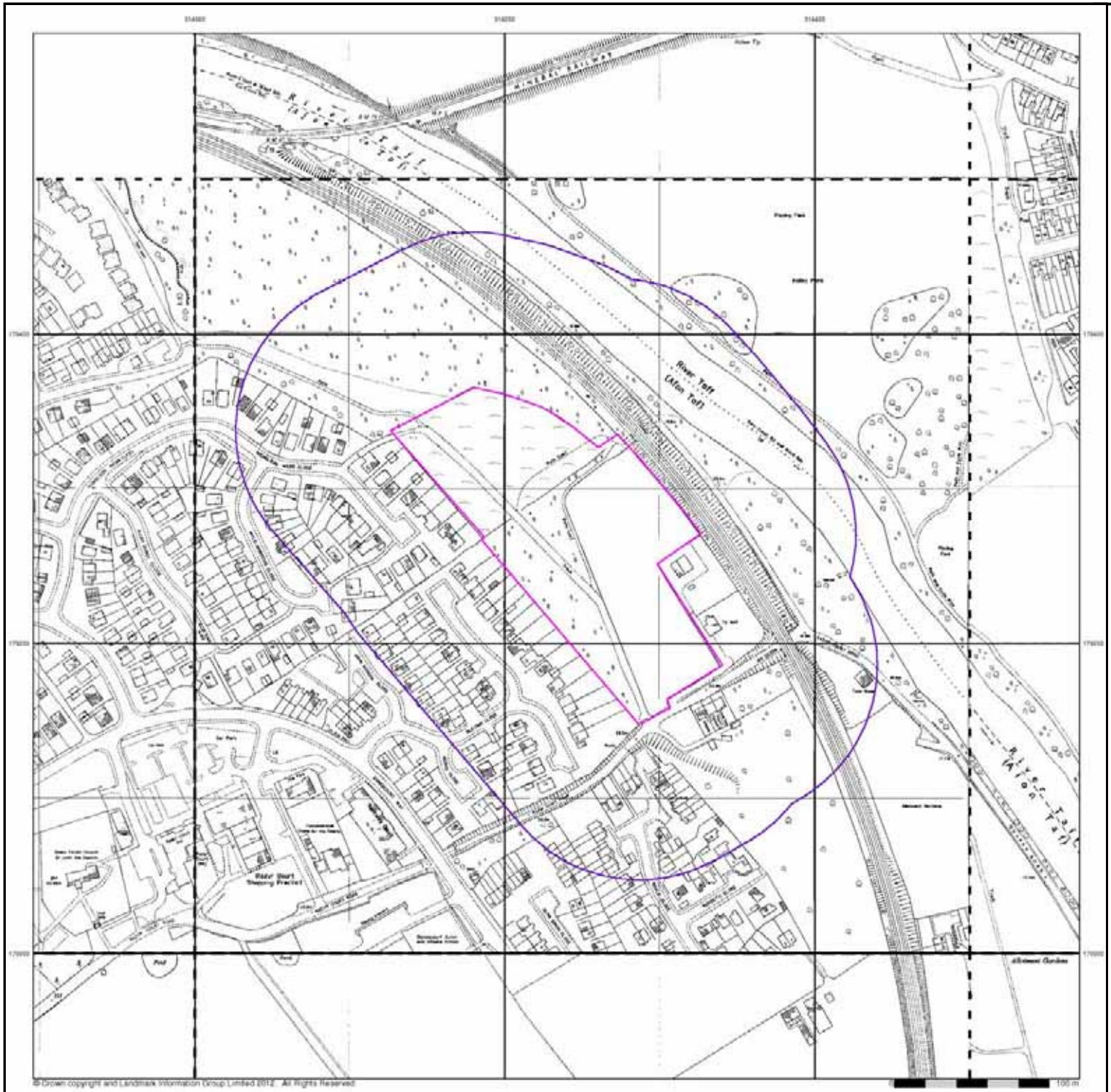
Order Number: 47708148_1_1
Customer Ref: 11213
National Grid Reference: 314240, 179260
Slice: A
Site Area (Ha): 2.15
Search Buffer (m): 100

Site Details

Radyr Court Road, CARDIFF

Landmark

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Intégral Géotechnique

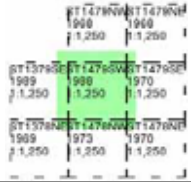
Ordnance Survey Plan

Published 1968 - 1989

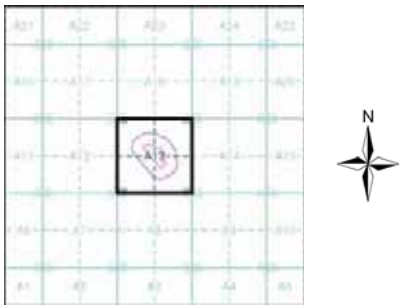
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	47708148_1_1
Customer Ref:	11213
National Grid Reference:	314240, 179260
Slice:	A
Site Area (Ha):	2.15
Search Buffer (m):	100

Site Details

Radyr Court Road, CARDIFF

Landmark

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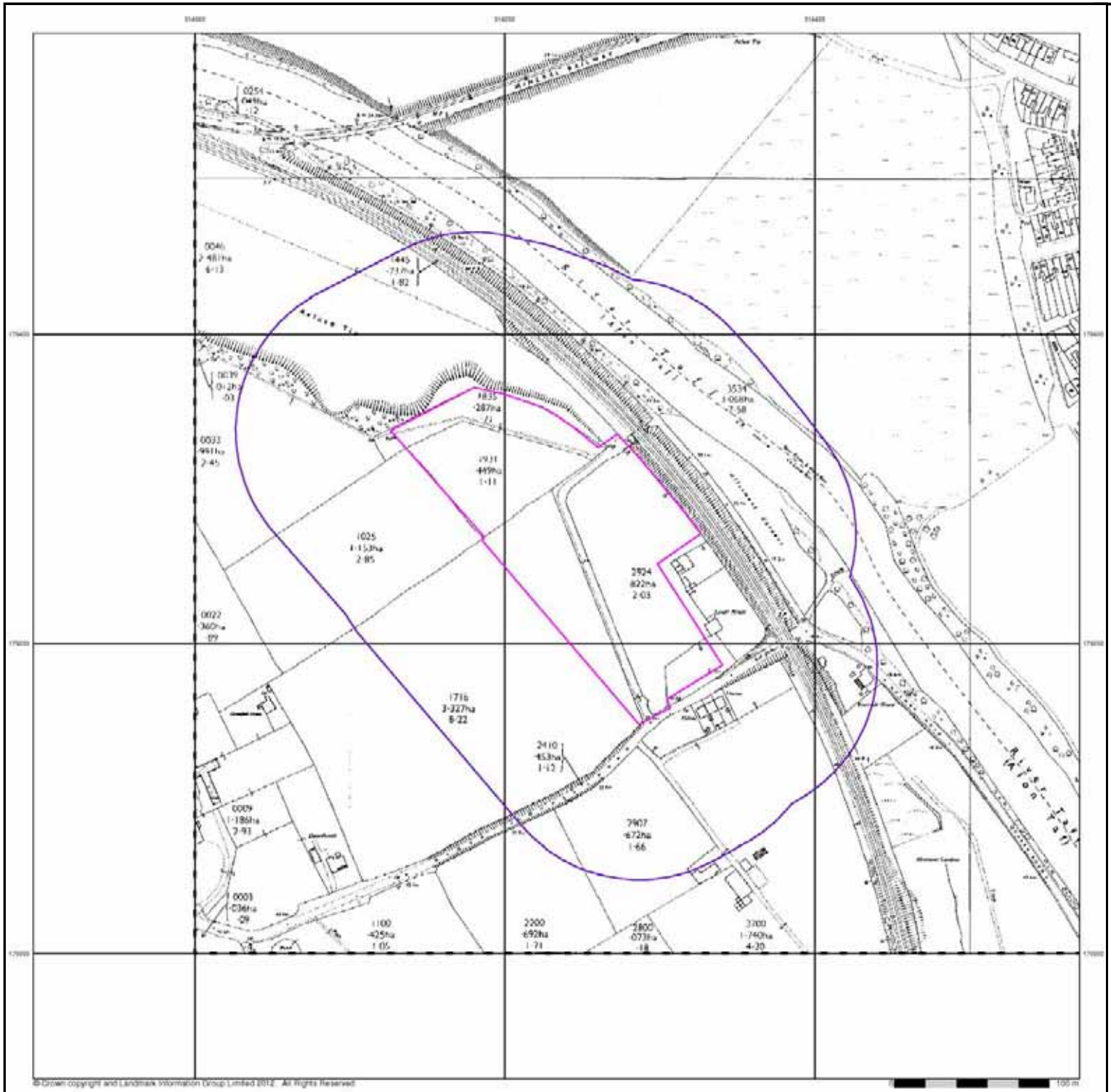

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Intégral Géotechnique

Ordnance Survey Plan

Published 1971

Source map scale - 1:2,500

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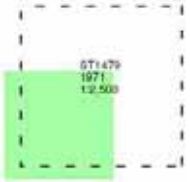
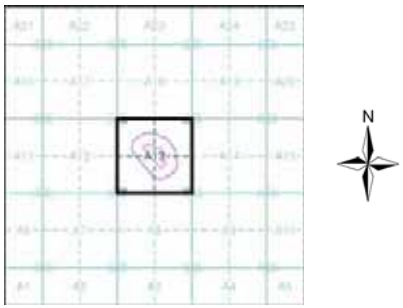
Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	47708148_1_1
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Slice:	A
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Search Buffer (m):	100

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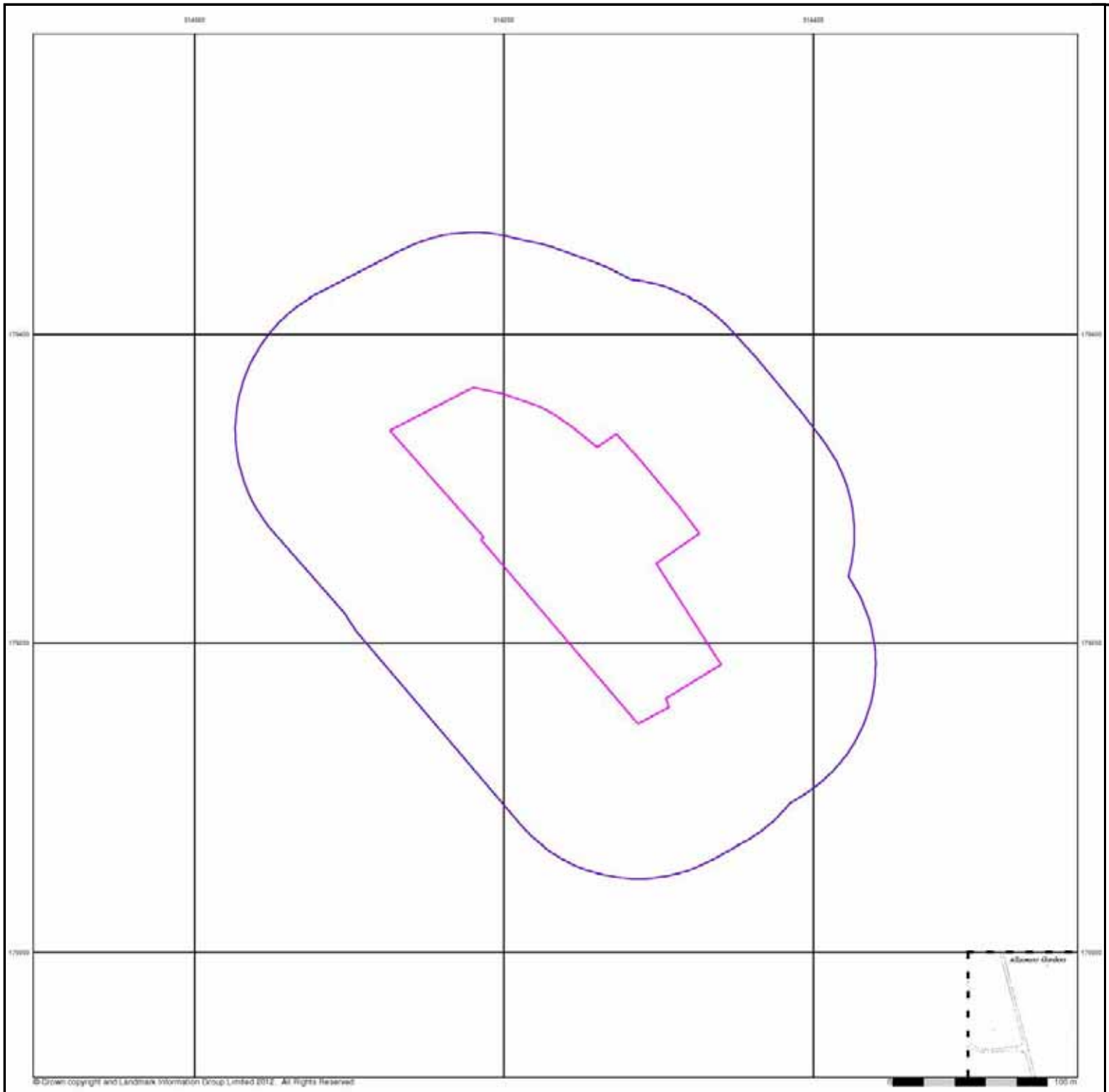

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Intégral Géotechnique

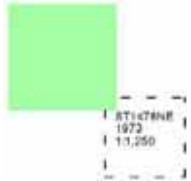
Supply of Unpublished Survey Information

Published 1973

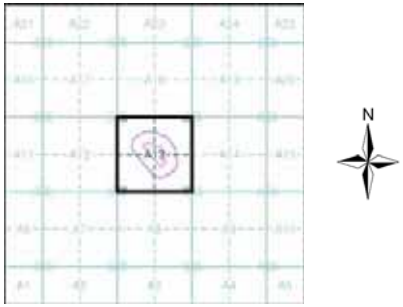
Source map scale - 1:1,250

SUSI maps (Supply of Unpublished Survey Information) were produced between 1972 and 1977, mainly for internal use at Ordnance Survey. These were more of a 'work-in-progress' plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	47708148_1_1
Customer Ref:	11213
National Grid Reference:	314240, 179260
Slice:	A
Site Area (Ha):	2.15
Search Buffer (m):	100

Site Details

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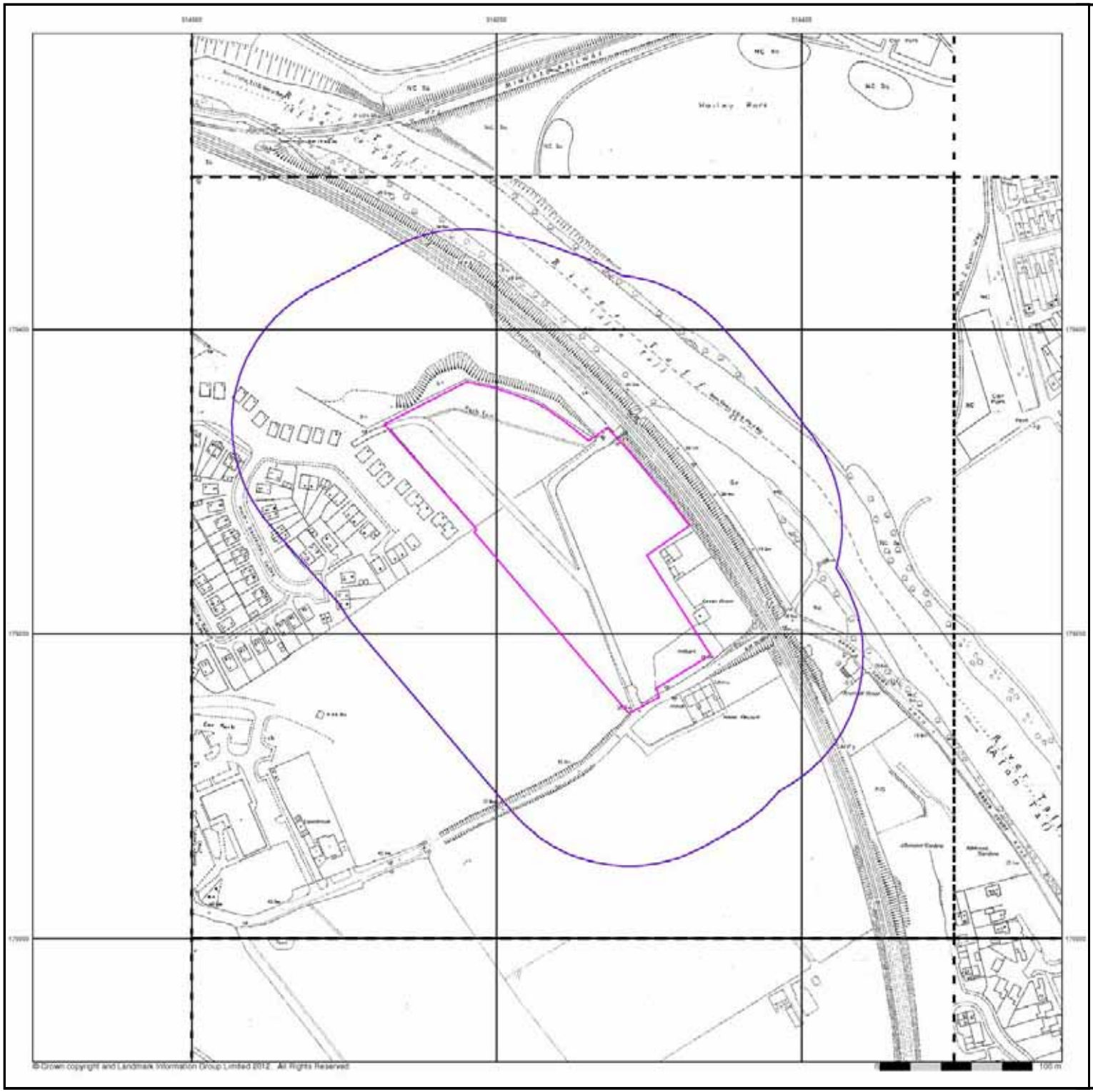

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Intégral Géotechnique

Additional SIMs

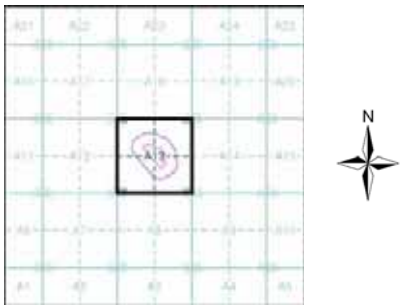
Published 1978 - 1989

Source map scale - 1:1,250

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

Historical Map - Segment A13



Order Details

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Intégral Géotechnique

Additional SIMs

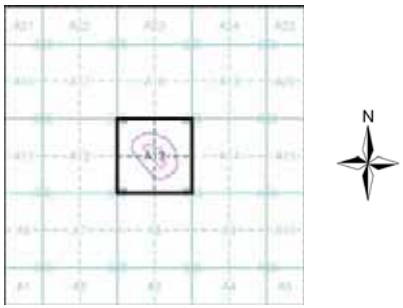
Published 1983 - 1985

Source map scale - 1:1,250

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

Historical Map - Segment A13



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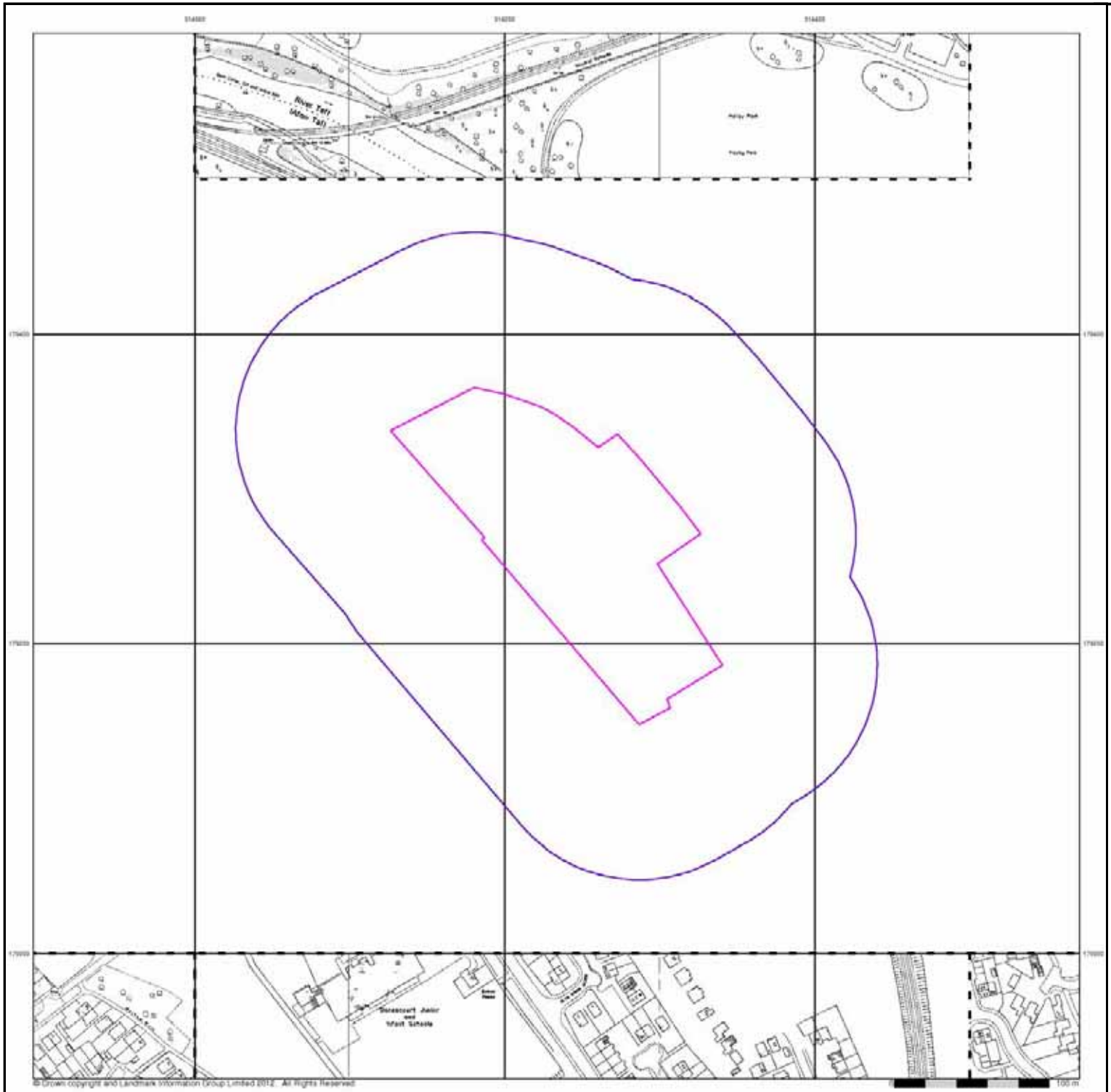

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Intégral Géotechnique

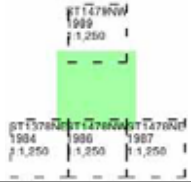
Ordnance Survey Plan

Published 1984 - 1989

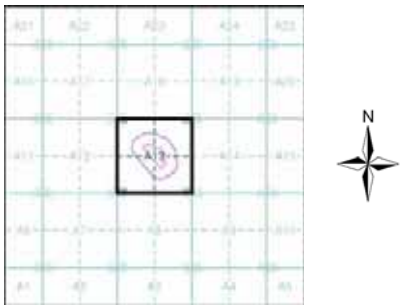
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



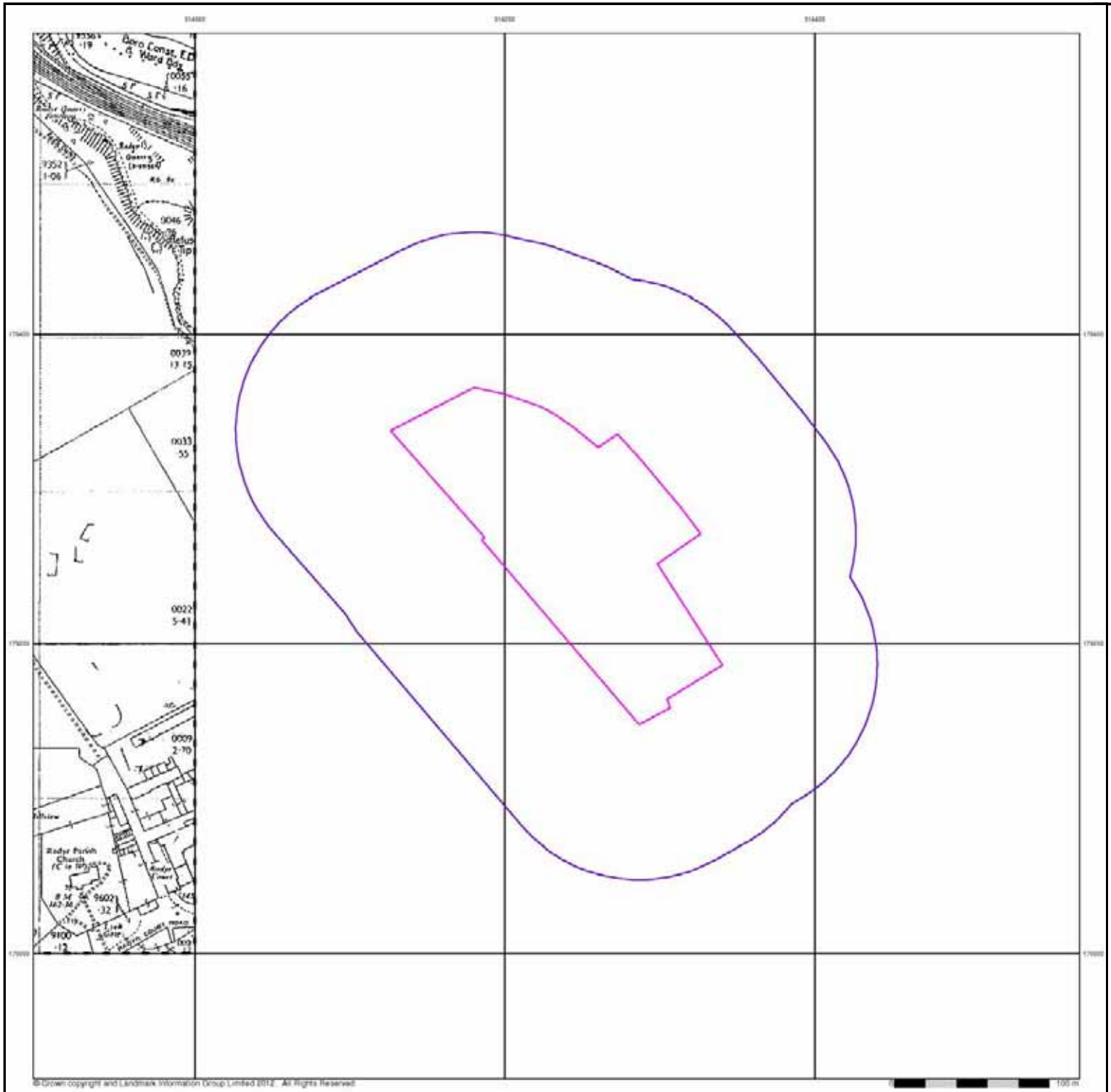
Order Details

Order Number:	47708148_1_1
Customer Ref:	11213
National Grid Reference:	314240, 179260
Slice:	A
Site Area (Ha):	2.15
Search Buffer (m):	100

Site Details

Radyr Court Road, CARDIFF

Landmark
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Intégral Géotechnique

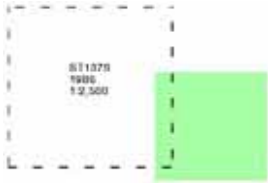
Additional SIMs

Published 1986

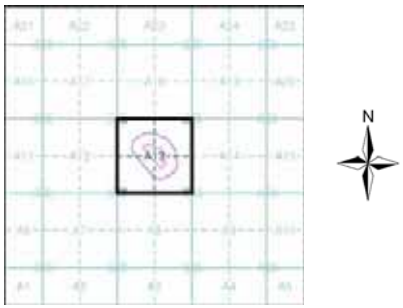
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



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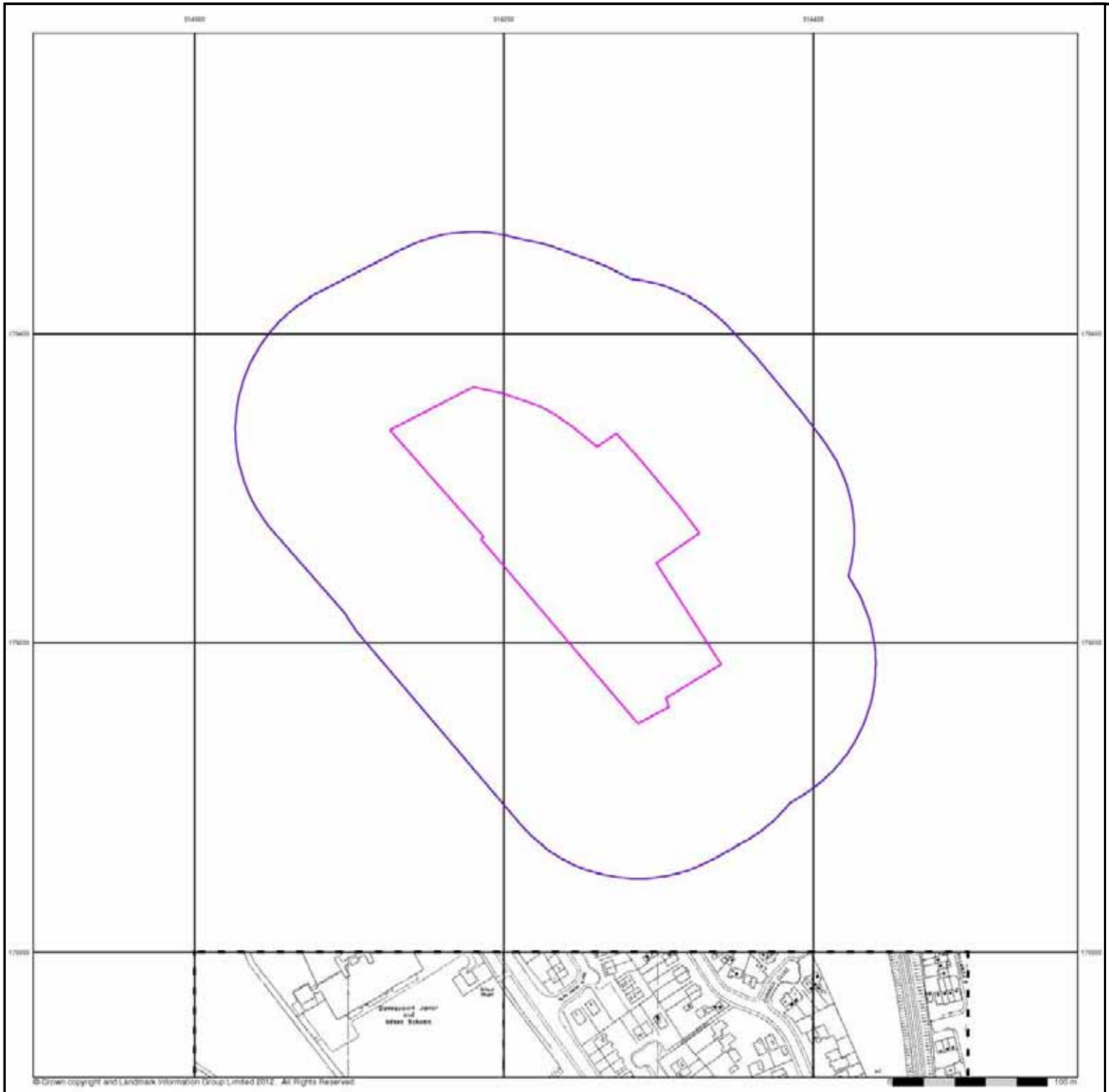

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Intégral Géotechnique

Additional SIMs

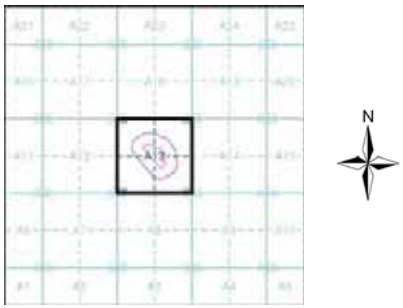
Published 1986

Source map scale - 1:1,250

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

Historical Map - Segment A13



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National Grid Reference:	314240, 179260
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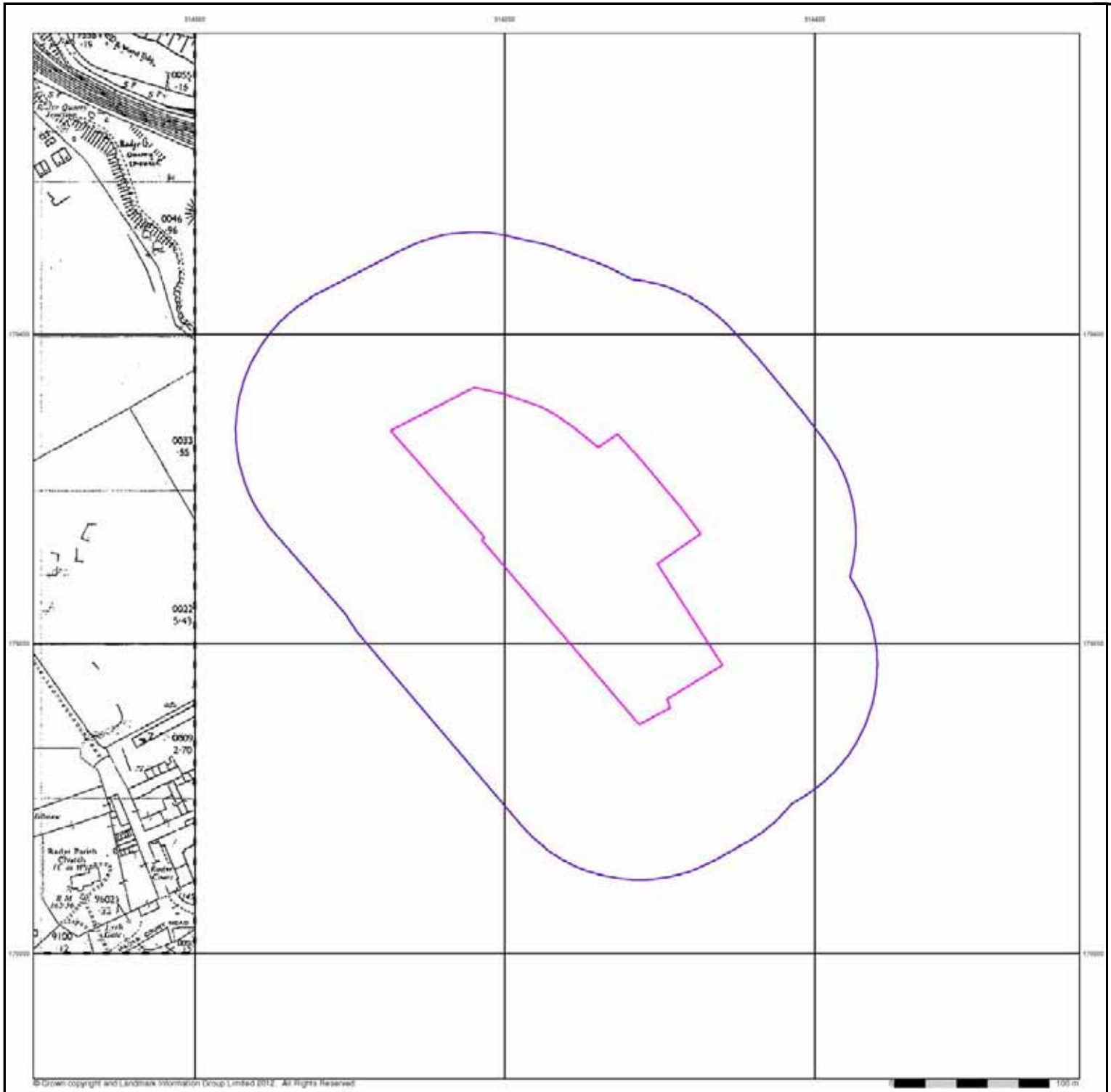

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Intégral Géotechnique

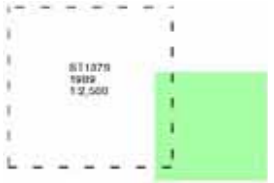
Additional SIMs

Published 1989

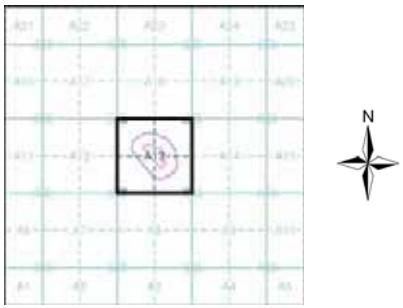
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



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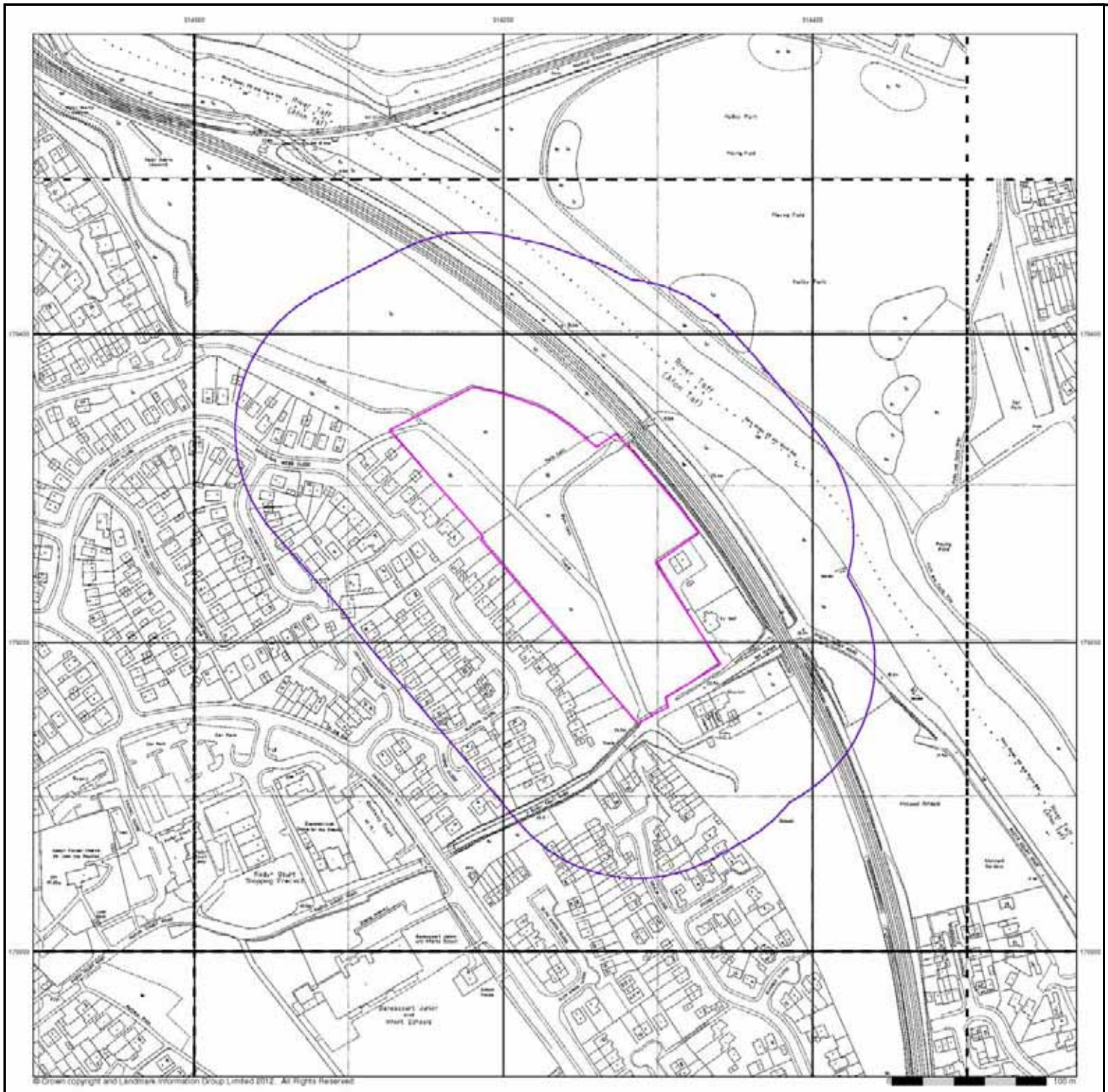


Intégral Géotechnique

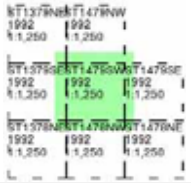
Large-Scale National Grid Data

Published 1992

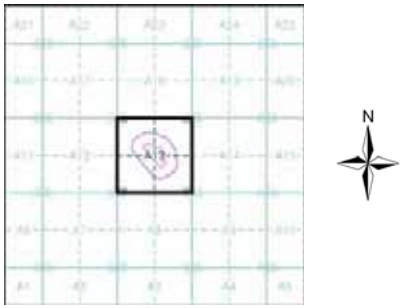
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

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National Grid Reference:	314240, 179260
Slice:	A
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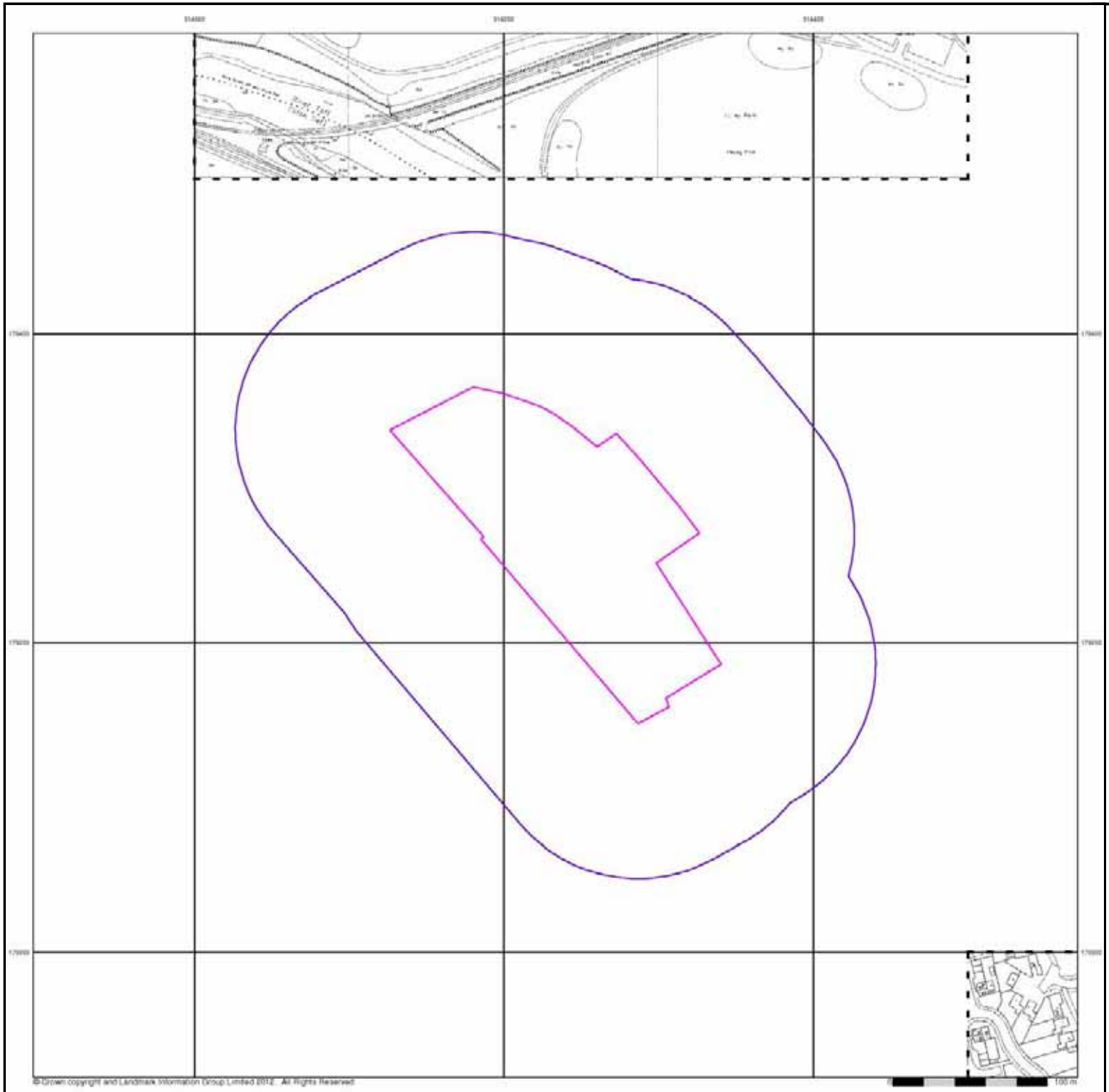

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Intégral Géotechnique

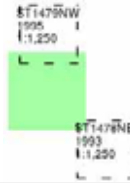
Large-Scale National Grid Data

Published 1993 - 1995

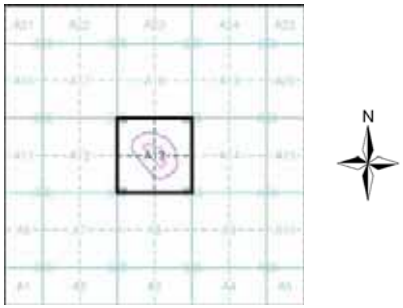
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	47708148_1_1
Customer Ref:	11213
National Grid Reference:	314240, 179260
Slice:	A
Site Area (Ha):	2.15
Search Buffer (m):	100

Site Details

Radyr Court Road, CARDIFF

Landmark
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Web: www.envirocheck.co.uk

Historical Mapping Legends

Ordnance Survey County Series 1:10,560

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
·285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. Rural District Boundary
Civil Parish Boundary

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Electricity Transmission Line
Pole
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Standard Gauge Single Track
Road Under
Road Over
Level Crossing
Foot Bridge
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

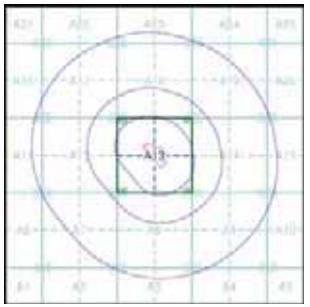
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

Intégral Géotechnique

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Glamorganshire	1:10,560	1886	3
Glamorganshire	1:10,560	1901	4
Glamorganshire	1:10,560	1922	5
Glamorganshire	1:10,560	1922	6
Glamorganshire	1:10,560	1938	7
Historical Aerial Photography	1:10,560	1947 - 1949	8
Historical Aerial Photography	1:10,560	1947	9
Glamorganshire	1:10,560	1951 - 1952	10
Ordnance Survey Plan	1:10,000	1964 - 1965	11
Ordnance Survey Plan	1:10,000	1974 - 1975	12
Ordnance Survey Plan	1:10,000	1982 - 1989	13
Cardiff	1:10,000	1982	14
Ordnance Survey Plan	1:10,000	1991 - 1993	15
Ordnance Survey Plan	1:10,000	1995	16
10K Raster Mapping	1:10,000	2006	17
10K Raster Mapping	1:10,000	2013	18

Historical Map - Slice A



Order Details

Order Number: 47708148_1_1
Customer Ref: 11213
National Grid Reference: 314240, 179260
Slice: A
Site Area (Ha): 2.15
Search Buffer (m): 1000

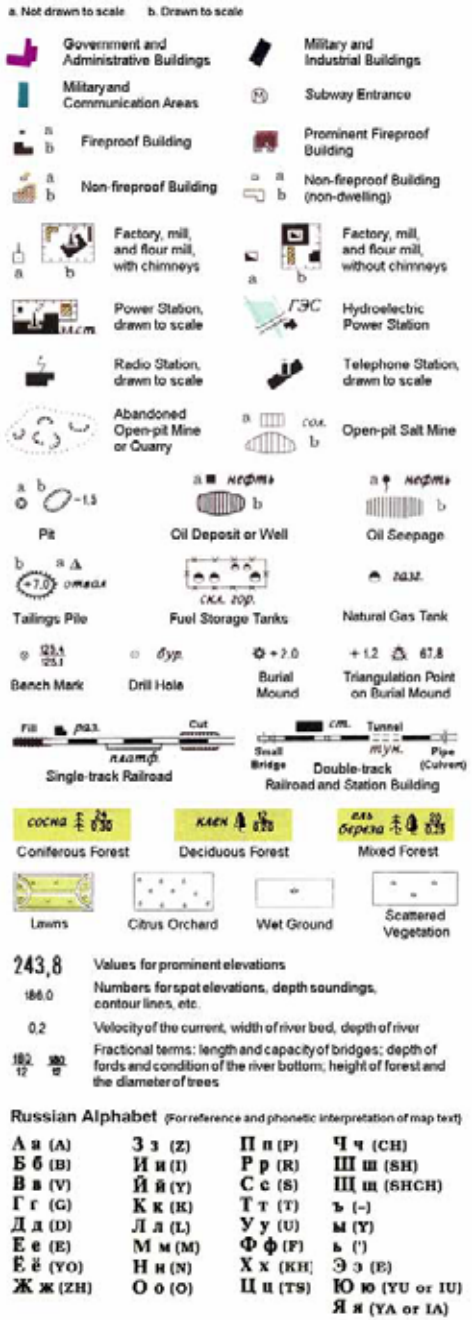
Site Details

Radyr Court Road, CARDIFF

Landmark
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Russian Military Mapping Legends

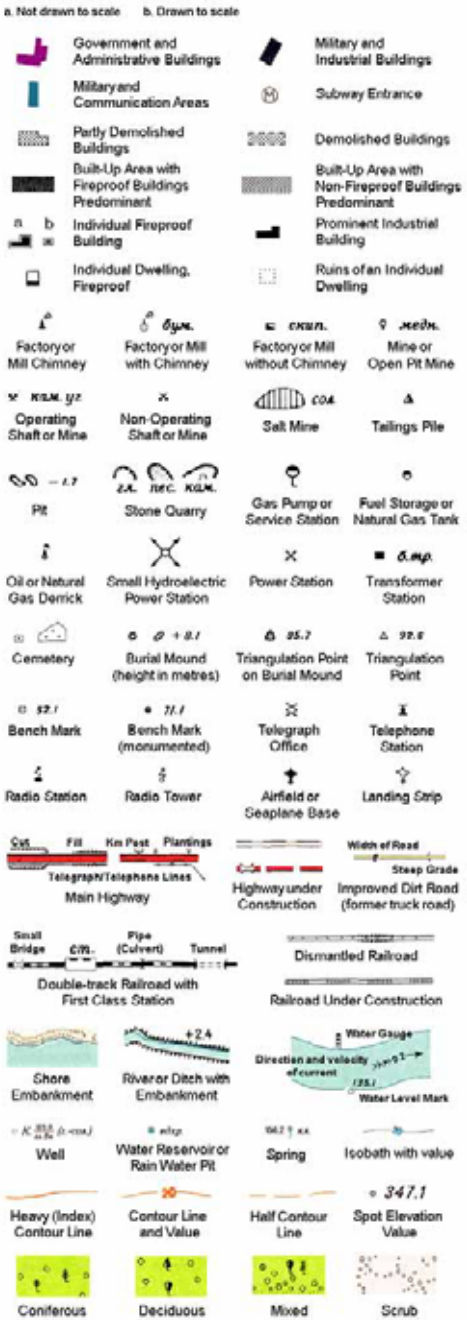
1:5,000 and 1:10,000 mapping



Russian Alphabet (For reference and phonetic interpretation of map text)

А а (A)	З з (Z)	П п (P)	Ч ч (CH)
Б б (B)	И и (I)	Р р (R)	Ш ш (SH)
В в (V)	Й й (Y)	С с (S)	Щ щ (SHCH)
Г г (G)	К к (K)	Т т (T)	ъ (-)
Д д (D)	Л л (L)	У у (U)	ы (Y)
Е е (E)	М м (M)	Ф ф (F)	ь (')
Ё ё (YO)	Н н (N)	Х х (KH)	Э э (E)
Ж ж (ZH)	О о (O)	Ц ц (TS)	Ю ю (YU or IU)
			Я я (YA or IA)

1:25,000 mapping



Key to Numbers on Mapping

ST17NW_Cardiff

No.	Description
101	Depot (Railway)

Intégral Géotechnique

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Glamorganshire	1:10,560	1886	3
Glamorganshire	1:10,560	1901	4
Glamorganshire	1:10,560	1922	5
Glamorganshire	1:10,560	1922	6
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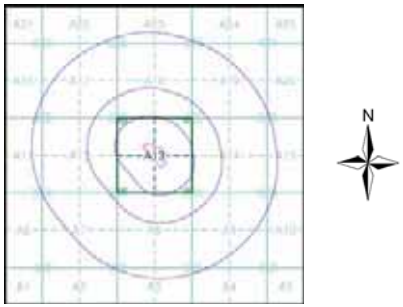
Ordnance Survey Plan	1:10,000	1974 - 1975	12
Ordnance Survey Plan	1:10,000	1982 - 1989	13
Cardiff	1:10,000	1982	14
Ordnance Survey Plan	1:10,000	1991 - 1993	15
Ordnance Survey Plan	1:10,000	1995	16
10K Raster Mapping	1:10,000	2006	17
10K Raster Mapping	1:10,000	2013	18

Russian Map - Slice A



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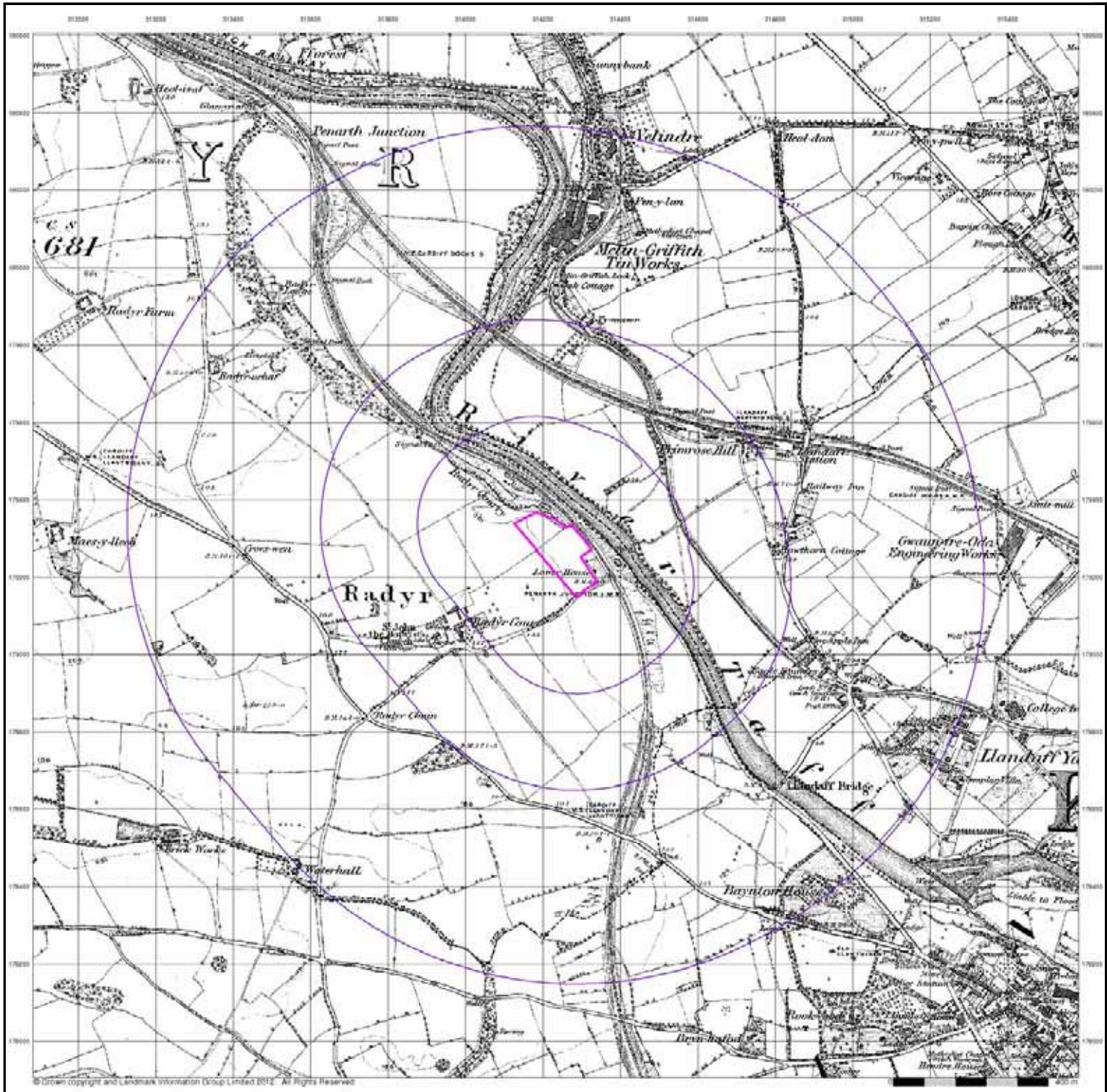

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Intégral Géotechnique

Glamorganshire

Published 1886

Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

Historical Map - Slice A

Order Details

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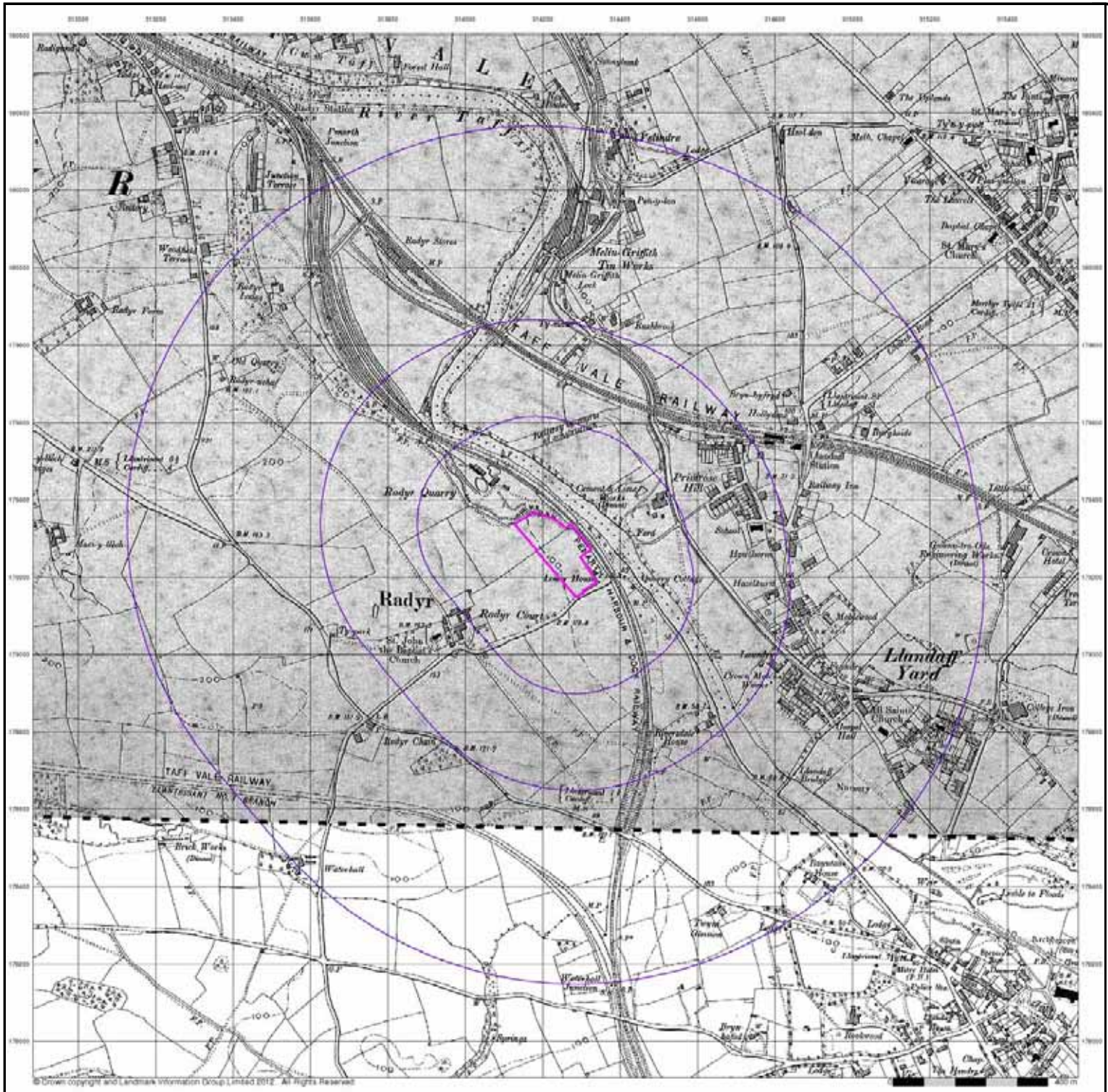

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Intégral Géotechnique

Glamorganshire

Published 1901

Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

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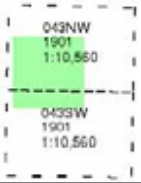

Historical Map - Slice A

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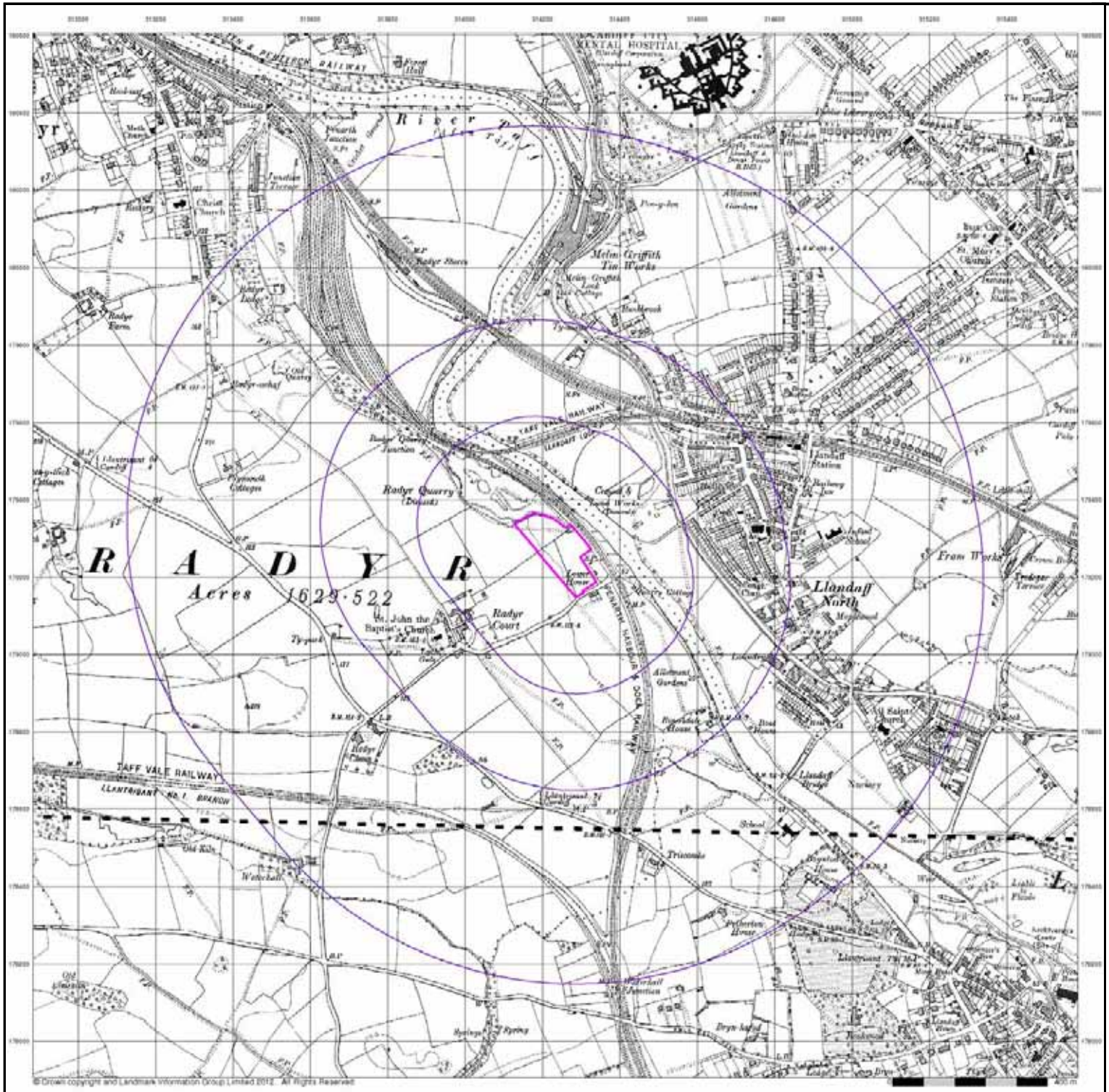

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Intégral Géotechnique

Glamorganshire

Published 1922

Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

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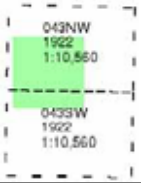


Historical Map - Slice A

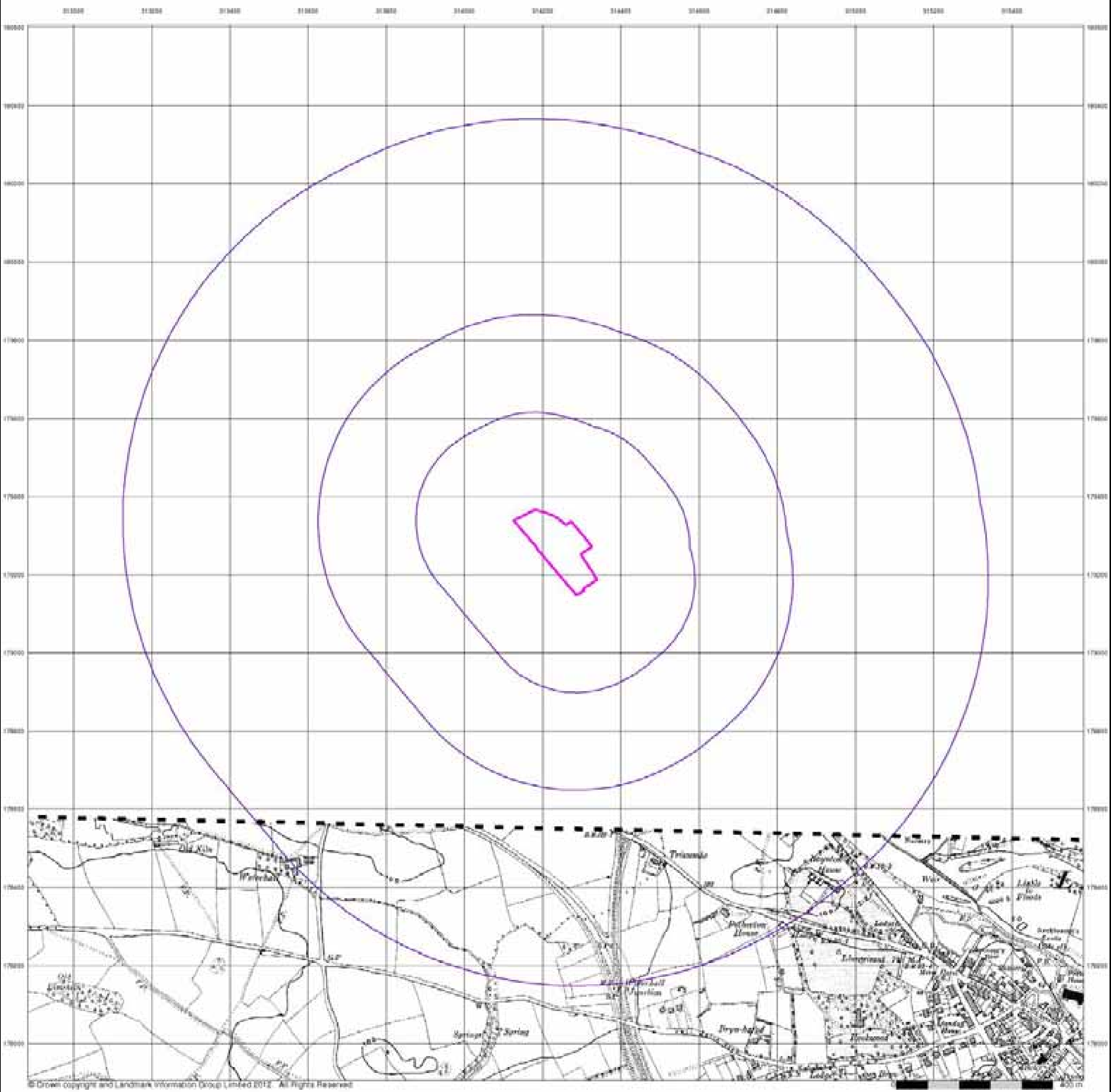
Order Details

Order Number:	47708148_1_1
Customer Ref:	11213
National Grid Reference:	314240, 179260
Slice:	A
Site Area (Ha):	2.15
Search Buffer (m):	1000

Site Details

Radyr Court Road, CARDIFF

Landmark
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Intégral
Géotechnique

Glamorganshire

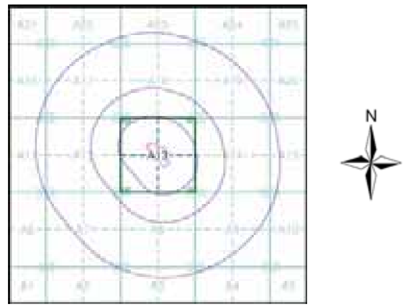
Published 1922

Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

Historical Map - Slice A



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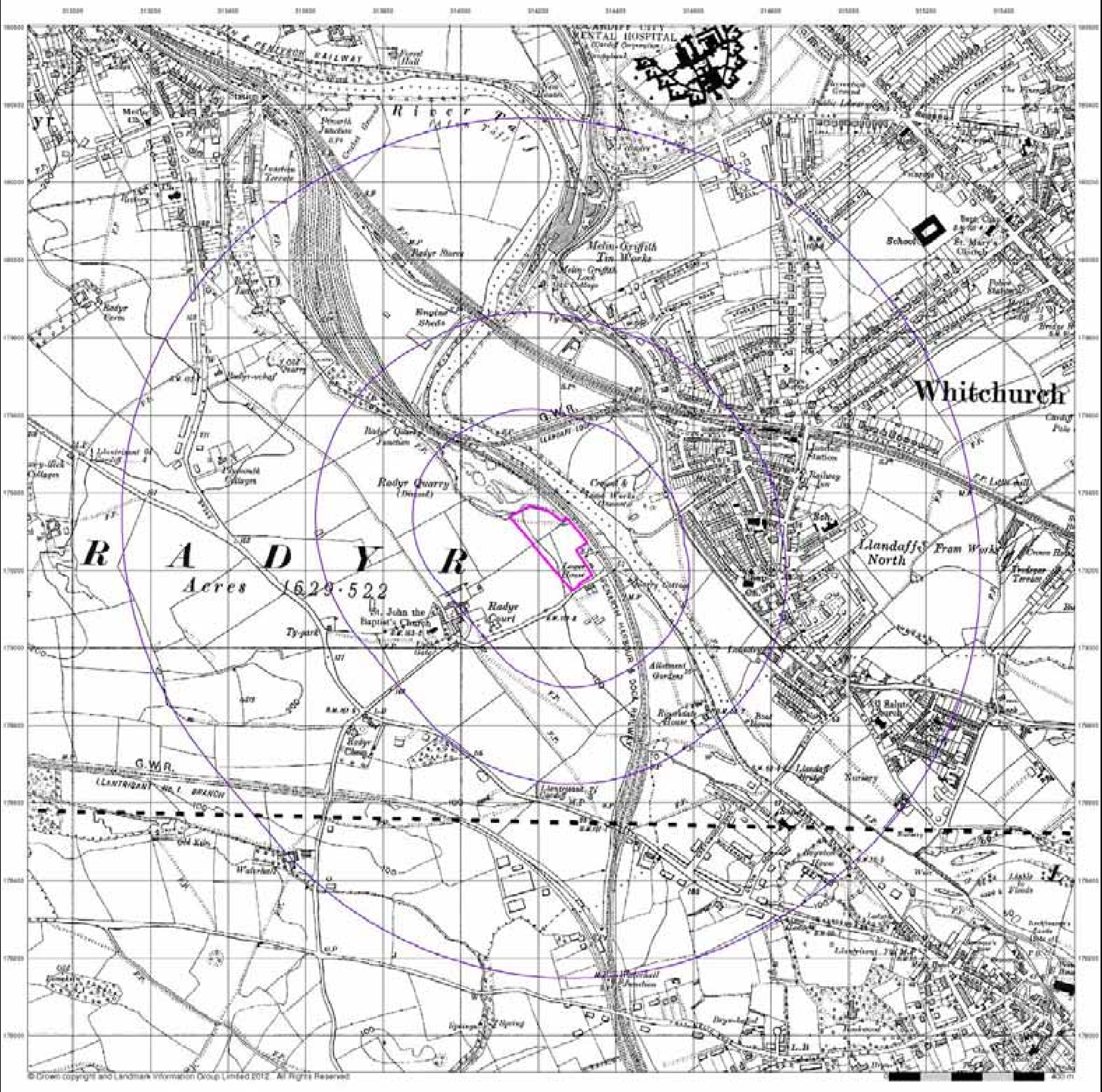


Intégral Géotechnique

Glamorganshire

Published 1938

Source map scale - 1:10,560

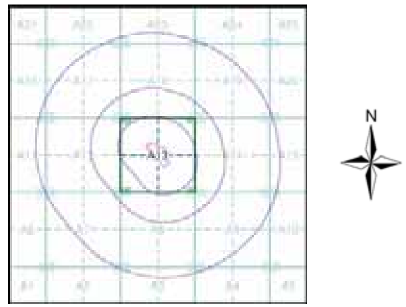
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

043NW 1938 1:10,560

043SW 1938 1:10,560

Historical Map - Slice A



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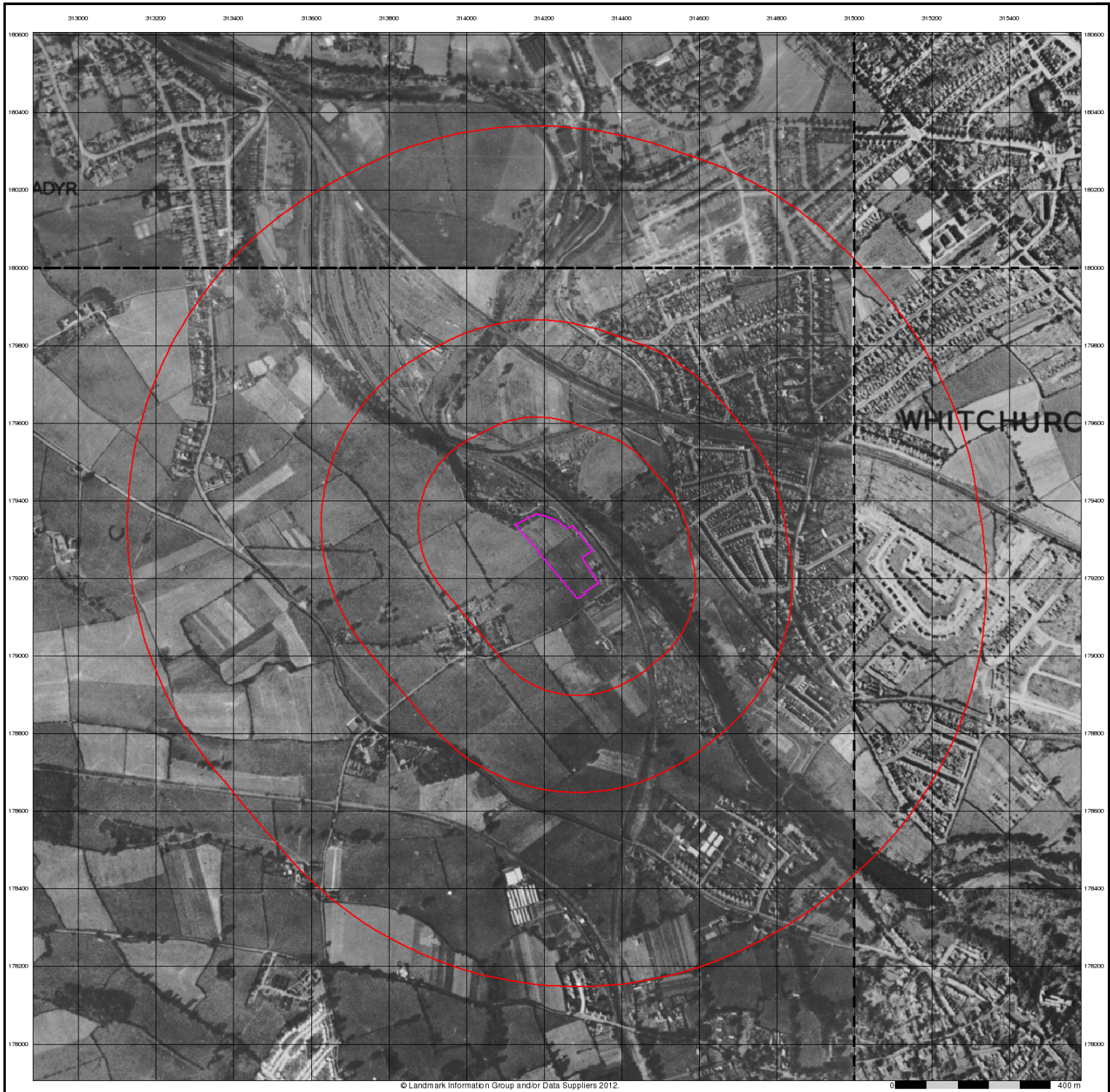

Intégral Géotechnique

Historical Aerial Photography

Published 1947 - 1949

Source map scale - 1:10,560

The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 1950's meant that every photograph was re-checked for potentially unsafe information with security sites replaced by fake fields or clouds. The original editions were withdrawn and only later made available after a period of fifty years although due to the accuracy of the editing, without viewing both revisions it is not easy to spot the edits. Where available Landmark have included both revisions.

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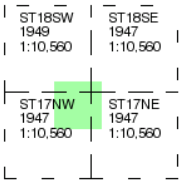
Map Name(s) and Date(s)



Historical Aerial Photography - Slice A

Order Details

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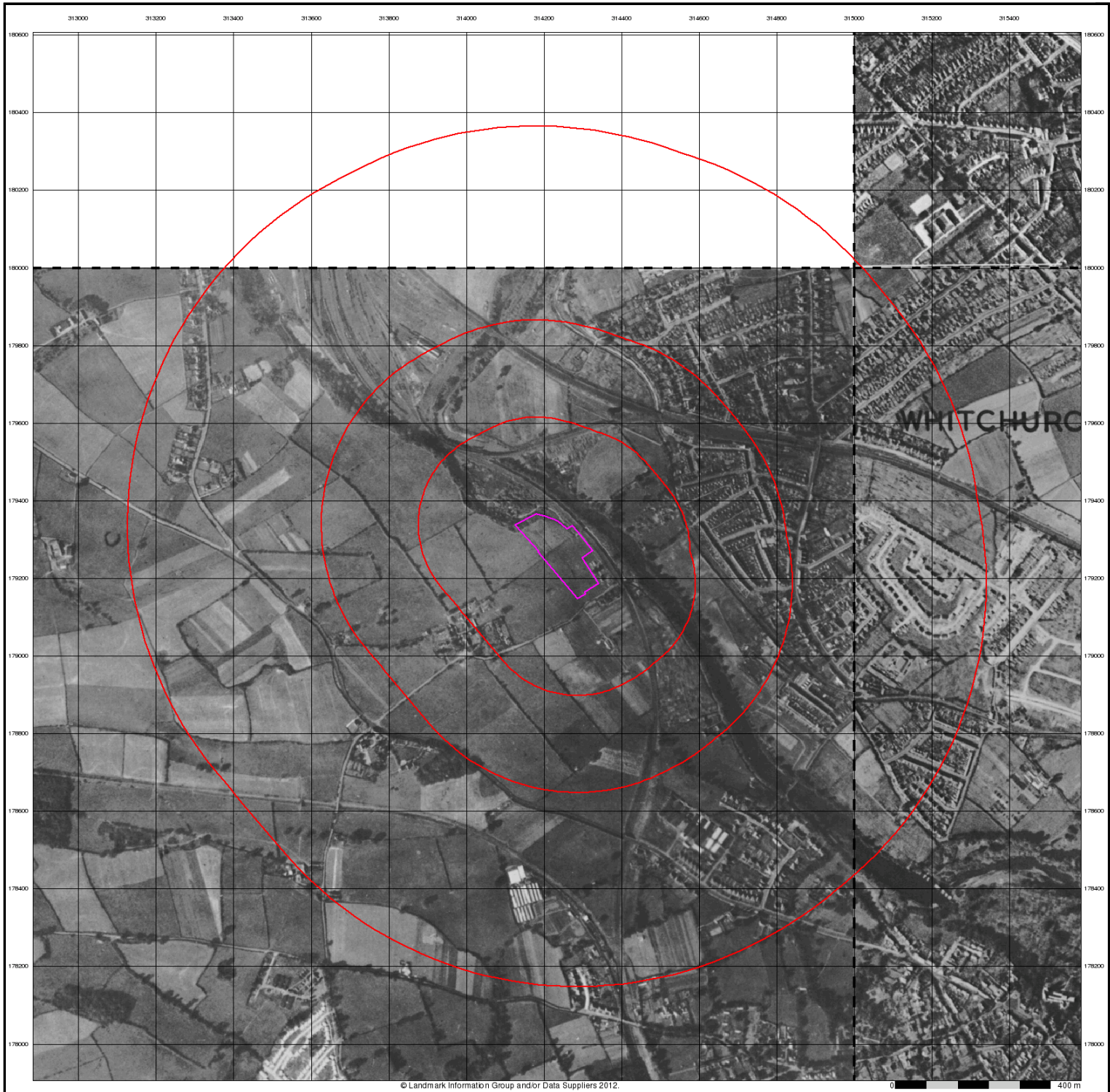

Intégral Géotechnique

Historical Aerial Photography

Published 1947

Source map scale - 1:10,560

The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 1950's meant that every photograph was re-checked for potentially unsafe information with security sites replaced by fake fields or clouds. The original editions were withdrawn and only later made available after a period of fifty years although due to the accuracy of the editing, without viewing both revisions it is not easy to spot the edits. Where available Landmark have included both revisions.

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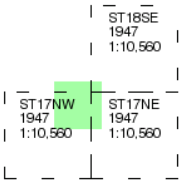

Historical Aerial Photography - Slice A

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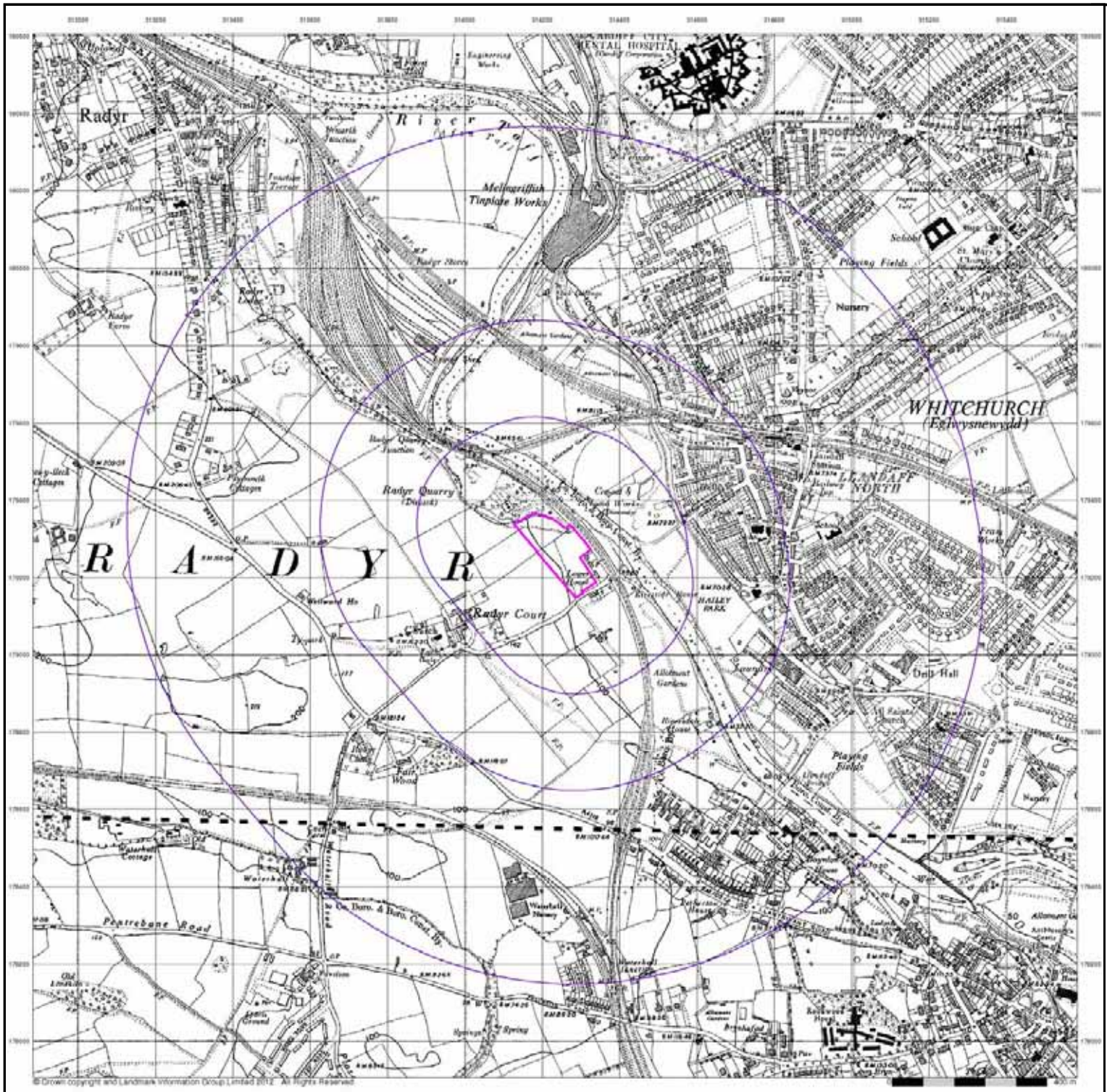

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Intégral Géotechnique

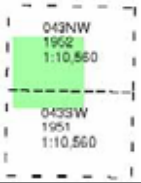
Glamorganshire

Published 1951 - 1952

Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A

Order Details

Order Number:	47708148_1_1
Customer Ref:	11213
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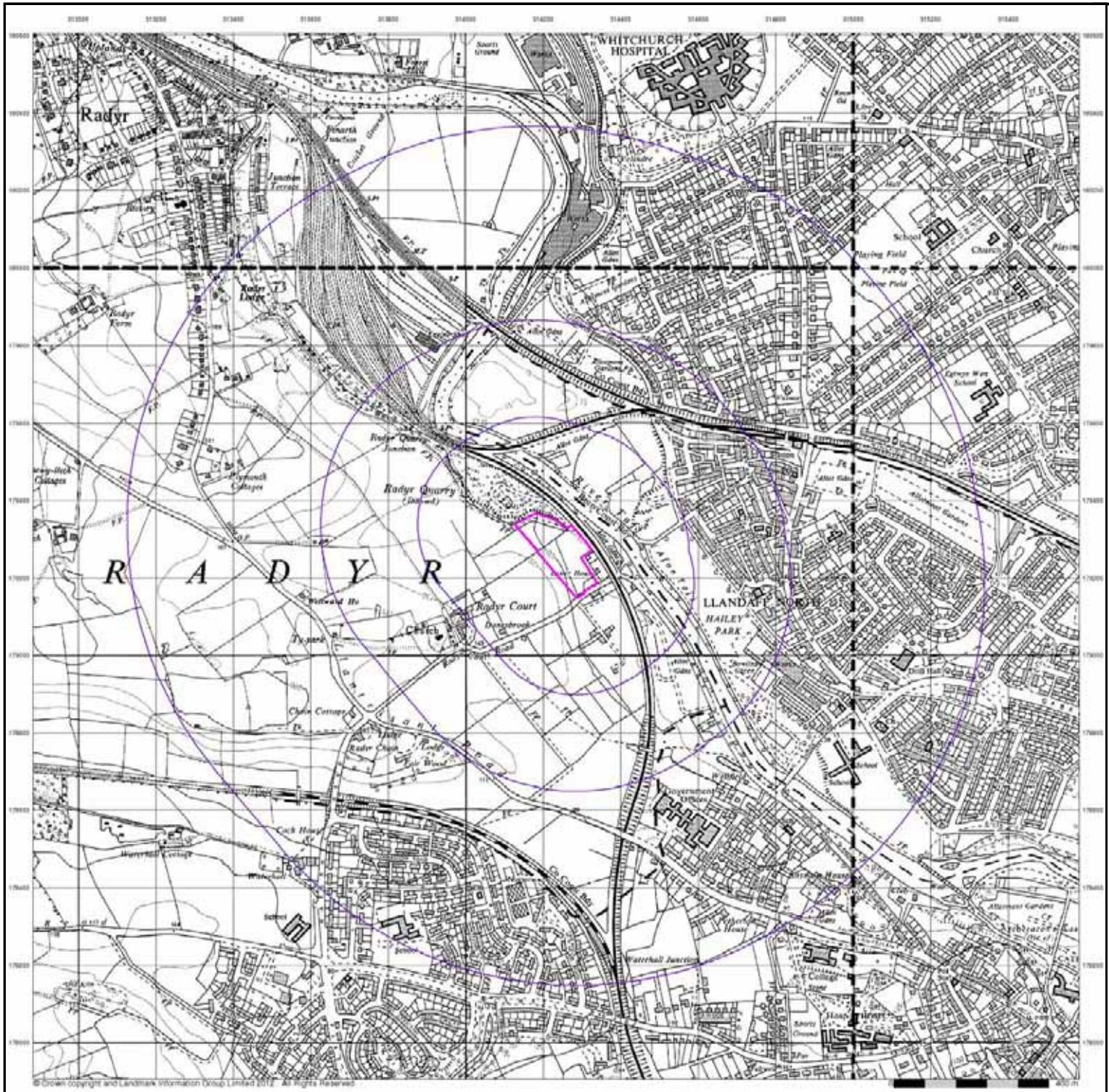

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Intégral Géotechnique

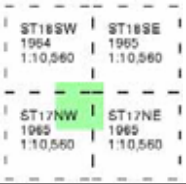
Ordnance Survey Plan

Published 1964 - 1965

Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A

Order Details

Order Number:	47708148_1_1
Customer Ref:	11213
National Grid Reference:	314240, 179260
Slice:	A
Site Area (Ha):	2.15
Search Buffer (m):	1000

Site Details

Radyr Court Road, CARDIFF

Landmark

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Intégral Géotechnique

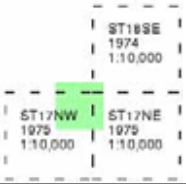
Ordnance Survey Plan

Published 1974 - 1975

Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A

Order Details

Order Number:	47708148_1_1
Customer Ref:	11213
National Grid Reference:	314240, 179260
Slice:	A
Site Area (Ha):	2.15
Search Buffer (m):	1000

Site Details

Radyr Court Road, CARDIFF

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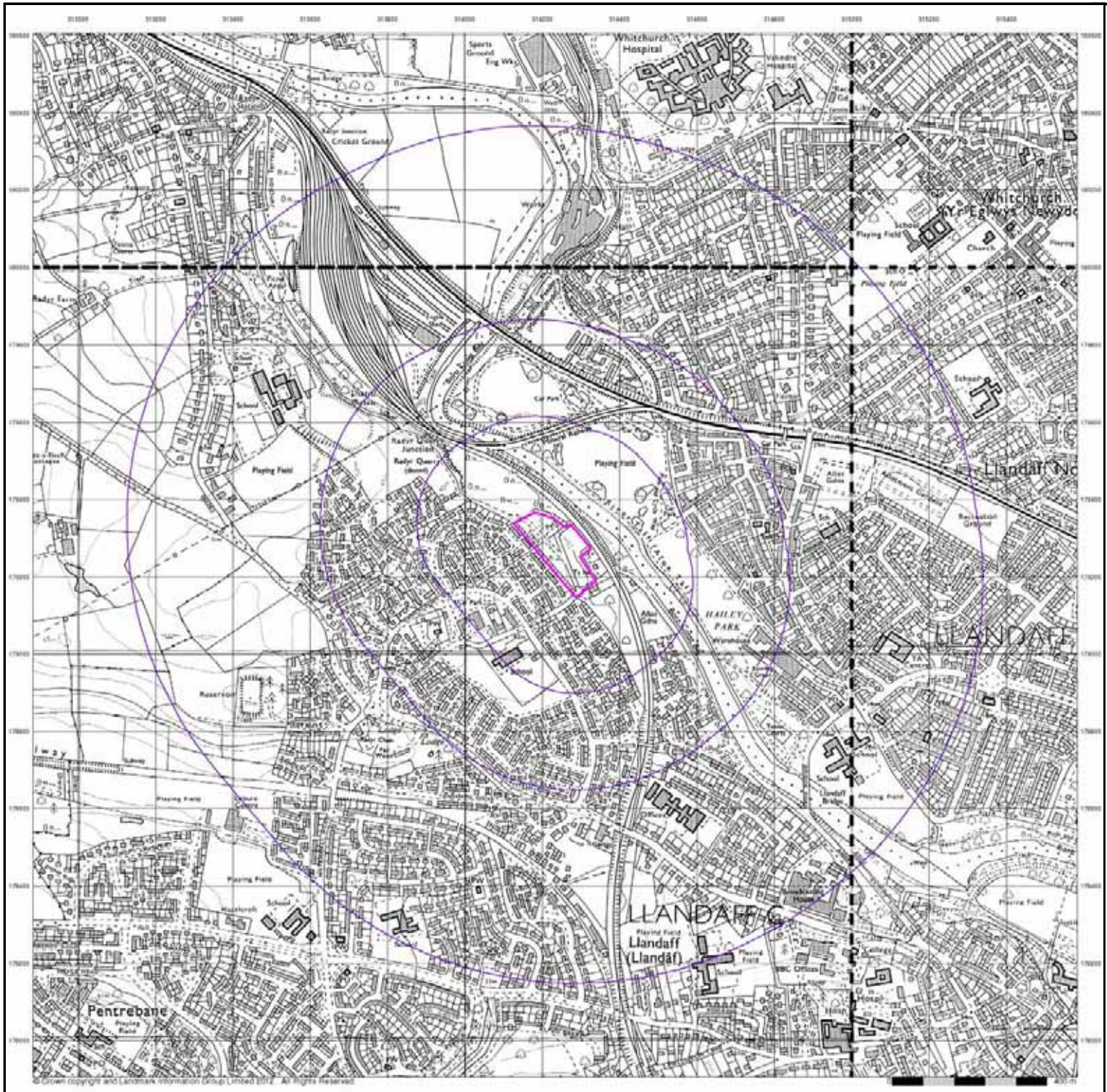


Intégral Géotechnique

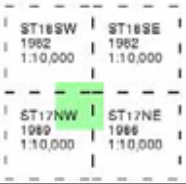
Ordnance Survey Plan

Published 1982 - 1989

Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A

Order Details

Order Number:	47708148_1_1
Customer Ref:	11213
National Grid Reference:	314240, 179260
Slice:	A
Site Area (Ha):	2.15
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Site Details

Radyr Court Road, CARDIFF

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Intégral Géotechnique

Cardiff

Published 1982

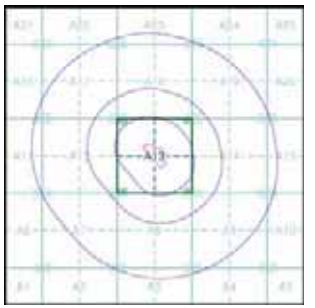
Source map scale - 1:10,000

These maps were produced by the Russian military during the Cold War between 1950 and 1997, and cover 103 towns and cities throughout the U.K. The maps are produced at 1:25,000, 1:10,000 and 1:5,000 scale, and show detailed land use, with colour-coded areas for development, green areas, and non-developed areas. Buildings are coloured black and important building uses (such as hospitals, post offices, factories etc.) are numbered, with a numbered key describing their use.
They were produced by the Russians for the benefit of navigation, as well as strategic military sites and transport hubs, for use if they were to have invaded the U.K. The detailed information provided indicates that the areas were surveyed using land-based personnel, on the ground, in the cities that are mapped.

Map Name(s) and Date(s)

ST18SW 1982 1:10,000	ST18SE 1982 1:10,000
ST17NW 1982 1:10,000	ST17NE 1982 1:10,000

Russian Map - Slice A



Order Details

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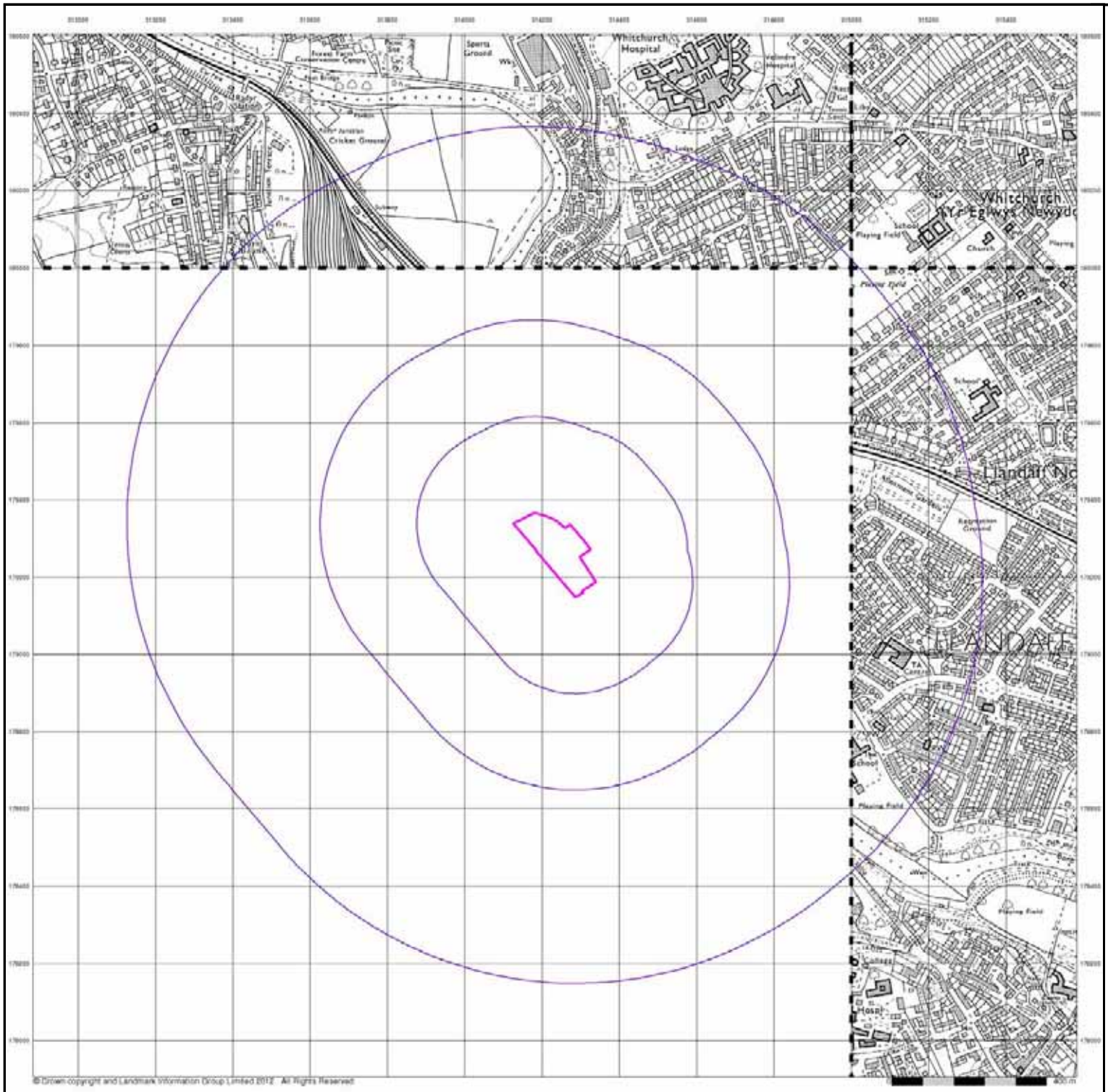


Intégral Géotechnique

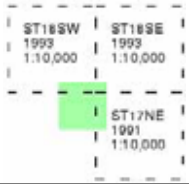
Ordnance Survey Plan

Published 1991 - 1993

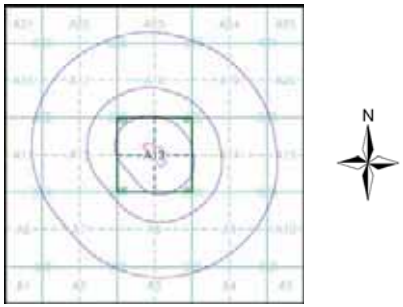
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



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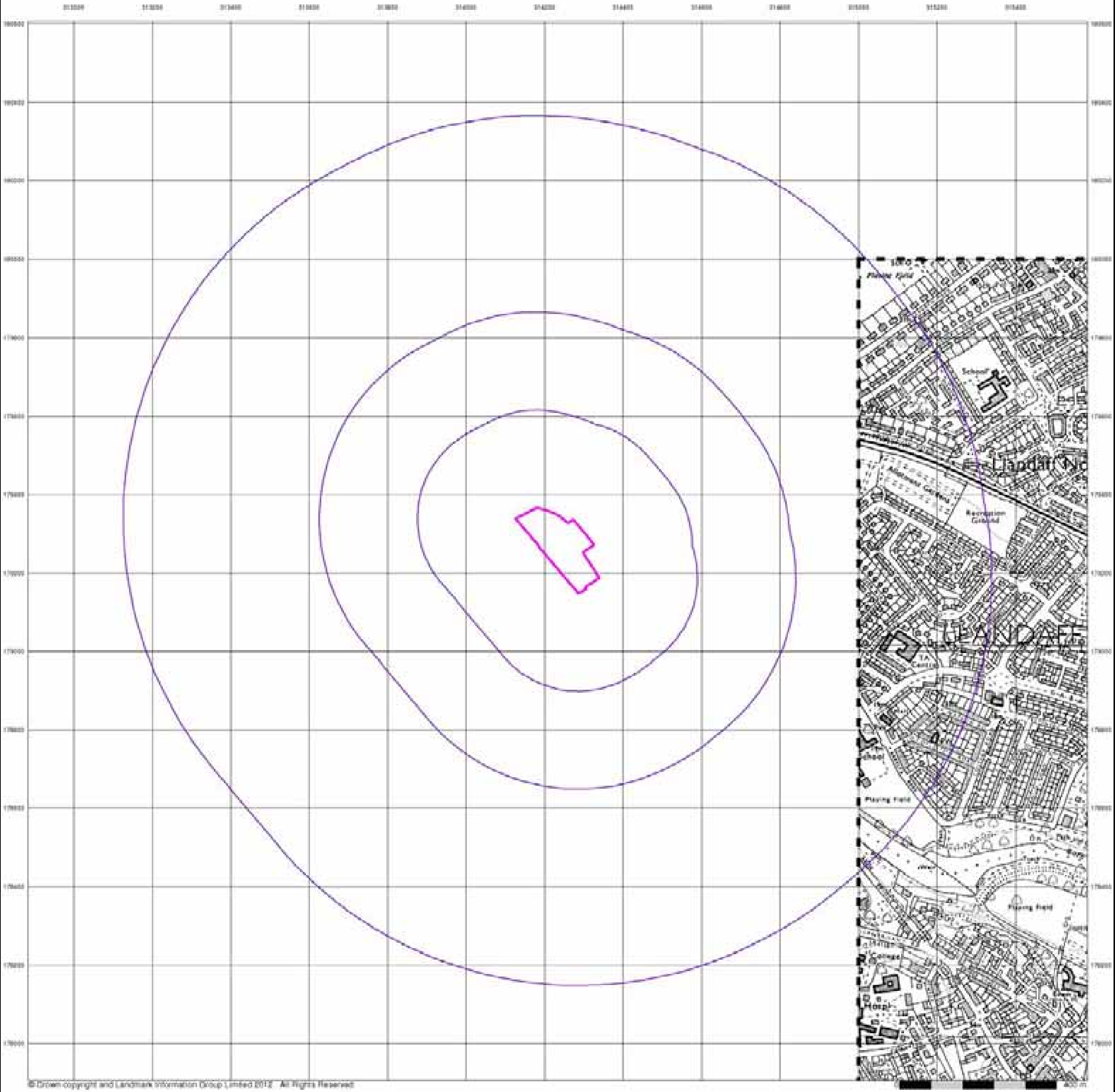

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Intégral Géotechnique

Ordnance Survey Plan

Published 1995

Source map scale - 1:10,000

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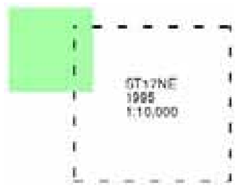
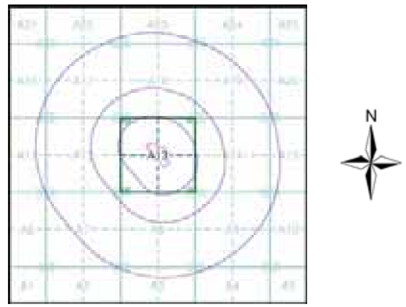
Map Name(s) and Date(s)



Historical Map - Slice A



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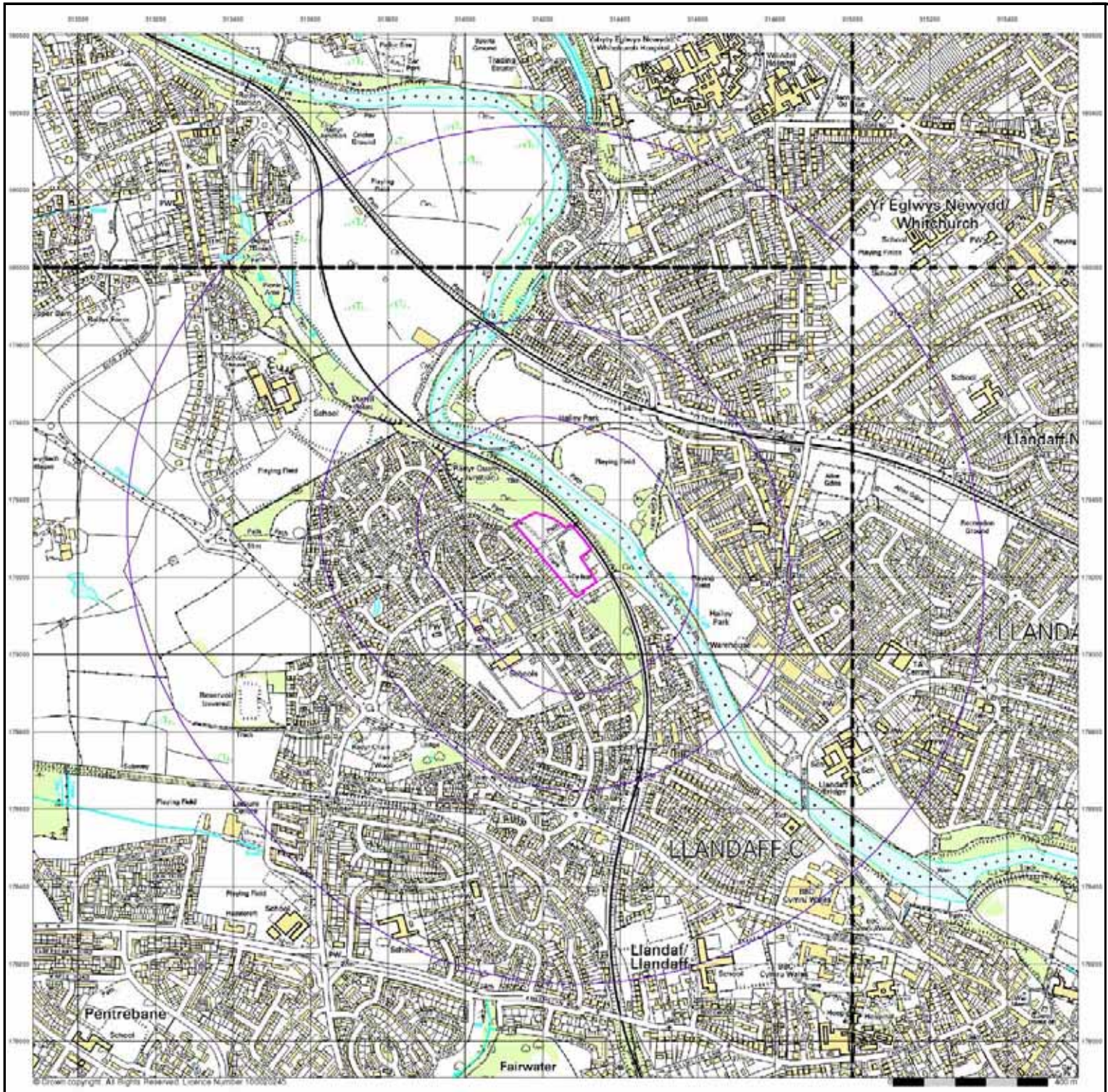

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Intégral Géotechnique

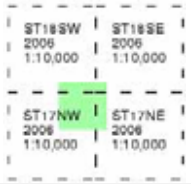
10k Raster Mapping

Published 2006

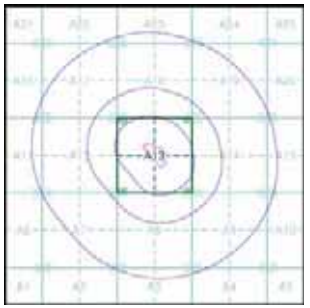
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)



Historical Map - Slice A



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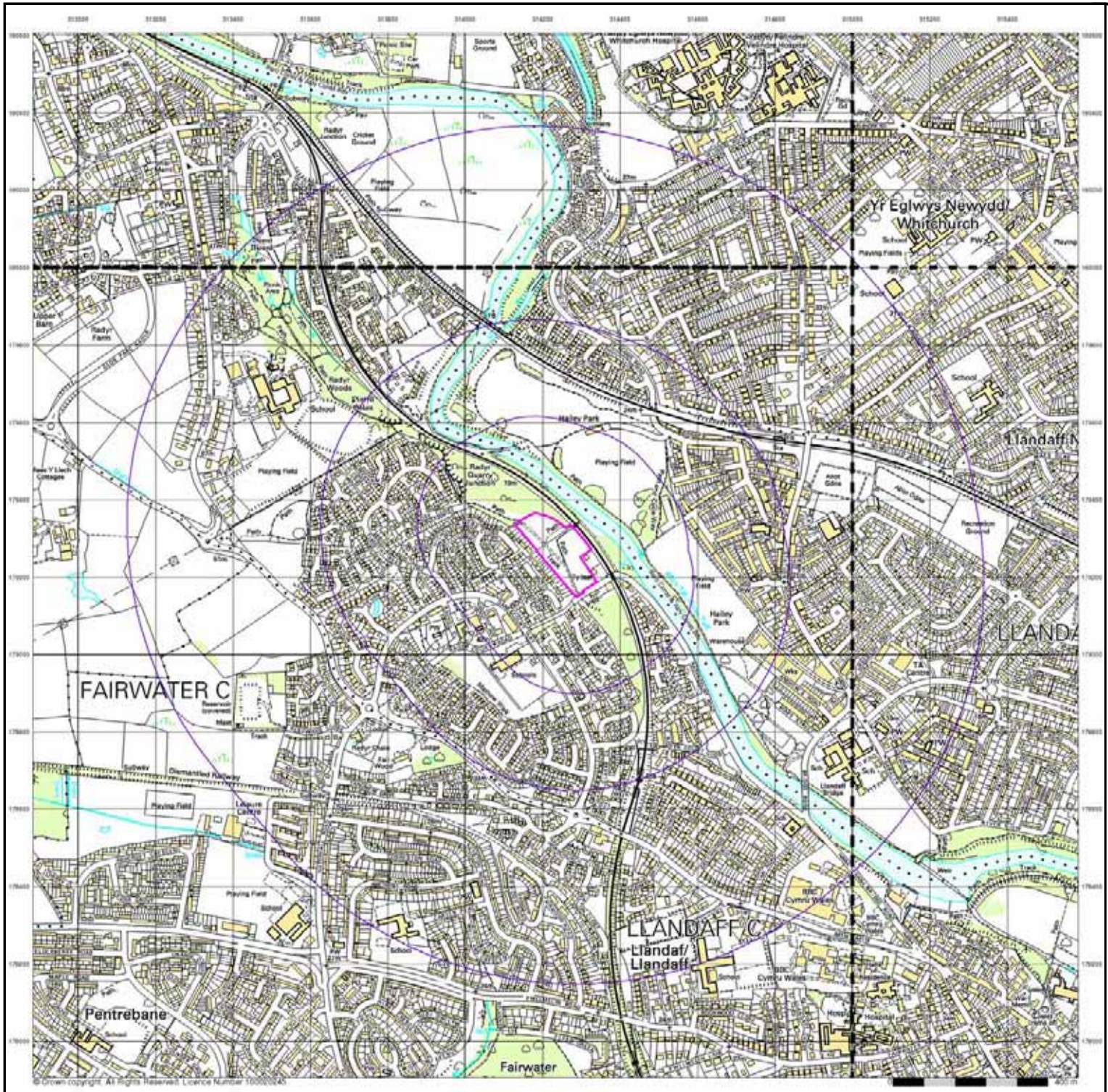


Intégral Géotechnique

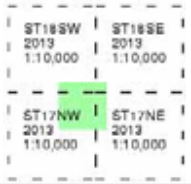
10k Raster Mapping

Published 2013

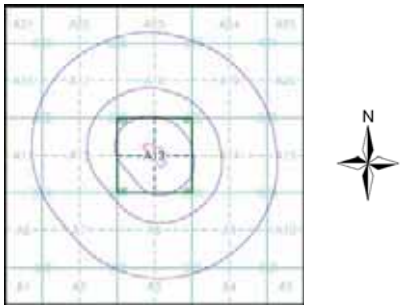
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	47708148_1_1
Customer Ref:	11213
National Grid Reference:	314240, 179260
Slice:	A
Site Area (Ha):	2.15
Search Buffer (m):	1000

Site Details

Radyr Court Road, CARDIFF

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Landmark

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

APPENDIX B

TRIAL PIT LOGS

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Project Name :	Project No.:	Trial Pit No.:
Radyr Court Road	**11213**	**TP1** Sheet 1 of 1

Location :	Client :	Logged By :	Scale :
Danescourt	PMG3		1:25

Equipment : CAT 40	Coordinates : -	Dimensions -
Date Excavated : 19/07/2013	Level : -	Depth : 3.00m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Soft brown slightly sandy silty CLAY [TOPSOIL]
			0.15			Medium dense, red brown, very slightly gravelly, clayey to very clayey SAND. Gravels are fine to medium sub-angular to sub-rounded of mixed natural lithologies.
			1.50			Dense red brown slightly clayey gravelly to very gravelly sand, progressing rapidly with depth to very gravelly SAND with cobbles. Gravels are fine to coarse rounded to sub-rounded of mixed natural lithologies.
			3.00			Trial Pit Complete at 3.00 m

0 1 2 3 4 5

Remarks:

Groundwater : Dry

Stability : Stable

Key :
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

HoleBASE 3.1 (Bd 426, 58) Standard Trialpit Log v2 dated 27th Nov 03

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Project Name :	Project No.:	Trial Pit No.:
Radyr Court Road	**11213**	**TP2** Sheet 1 of 1

Location :	Client :	Logged By :	Scale :
Danescourt	PMG3		1:25

Equipment : CAT40	Coordinates : -	Dimensions -
Date Excavated : 19/07/2013	Level : -	Depth : 3.10m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
			0.15			Soft brown slightly sandy silty CLAY [TOPSOIL]
						Firm, red brown, very slightly gravelly, very sandy CLAY. Gravels are fine to medium sub-angular to angular of mixed natural lithologies.
			1.20			Dense red brown slightly clayey gravelly to very gravelly sand, becoming coarser with depth to very gravelly SAND with many cobbles. Gravels are fine to coarse rounded to sub-rounded of mixed natural lithologies.
			3.10			Trial Pit Complete at 3.10 m

0 1 2 3 4 5

Remarks:

Groundwater : None

Stability : Stable

Key :
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

HoleBASE 3.1 (Bld 426, 58) Standard Trialpit Log v2 dated 27th Nov 03

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Project Name :	Project No.:	Trial Pit No.:
Radyr Court Road	**11213**	**TP3** Sheet 1 of 1

Location :	Client :	Logged By :	Scale :
Danescourt	PMG3		1:25

Equipment : CAT40	Coordinates : -	Dimensions -
Date Excavated : 19/07/2013	Level : -	Depth : 3.20m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Soft brown slightly sandy silty CLAY [TOPSOIL]
			0.15			Firm, red brown, slightly sandy, slightly gravelly CLAY. Gravels are fine to medium sub-angular to sub-rounded of mixed natural lithologies.
			2.10			Dense pinky brown sandy GRAVEL becoming coarser with depth to include many cobbles. Gravels are fine to coarse rounded to sub-rounded of mixed natural lithologies. Occasional small pockets of soft clay noted.
			3.20			Trial Pit Complete at 3.20 m

0 1 2 3 4 5

Remarks:

Groundwater : None though slight dampness to sandy cobbly gravels

Stability : Stable

Key :
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

HoleBASE 3.1 (Bd 426.58) Standard Trialpit Log v2 dated 27th Nov 03

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Project Name :	Project No.:	Trial Pit No.:
Radyr Court Road	**11213**	**TP4** Sheet 1 of 1

Location :	Client :	Logged By :	Scale :
Danescourt	PMG3		1:25

Equipment : CAT40	Coordinates : -	Dimensions -
Date Excavated : 19/07/2013	Level : -	Depth : 3.10m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Soft brown slightly sandy silty CLAY [TOPSOIL]
			0.15			Firm, red brown, sandy, gravelly CLAY. Gravels are fine to coarse sub-angular to sub-rounded of mixed natural lithologies. Clay is occasionally soft to firm
			1.50			Dense pinky brown sandy GRAVEL becoming coarser with depth to include many cobbles. Gravels are fine to coarse rounded to sub-rounded of mixed natural lithologies.
			3.10			Trial Pit Complete at 3.10 m

0 1 2 3 4 5

Remarks:

Groundwater : None though very slight dampness to sandy cobbly gravels

Stability : Generally stable, though some side collapse noted within sandy cobbly gravels from 1.6mbgl

Key :
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

HoleBASE 3.1 (Bd 426.58) Standard Trialpit Log v2 dated 27th Nov 03

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Project Name :	Project No.:	Trial Pit No.:
Radyr Court Road	**11213**	**TP5** Sheet 1 of 1

Location :	Client :	Logged By :	Scale :
Danescourt	PMG3		1:25

Equipment : CAT40	Coordinates : -	Dimensions -
Date Excavated : 19/07/2013	Level : -	Depth : 3.30m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Soft brown slightly sandy silty CLAY [TOPSOIL]
			0.15			Firm, red brown and yellow brown, sandy to very sandy, slightly gravelly CLAY. Gravels are fine to coarse sub-angular to sub-rounded of mixed natural lithologies.
						At 1.8mbgl a layer of quartzitic conglomerate is encountered in south west face of pit. This was very hard to excavate and retrieved as cobbles and boulders - possibly bedrock. The trial pit was extended north east to avoid this and progress deeper. Below 2m, pockets / lenses of soft and wet very sandy clays were encountered.
			3.30			Trial Pit Complete at 3.30 m

0 1 2 3 4 5

Remarks:

Groundwater : None

Stability : Stable

Key :
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

HoleBASE 3.1 (Bld 426.58) Standard Trialpit Log v2 dated 27th Nov 03

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Project Name :	Project No.:	Trial Pit No.:
Radyr Court Road	**11213**	**TP6** Sheet 1 of 1

Location :	Client :	Logged By :	Scale :
Danescourt	PMG3		1:25

Equipment : CAT40	Coordinates : -	Dimensions -
Date Excavated : 19/07/2013	Level : -	Depth : 3.00m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
			0.15			Soft brown slightly sandy silty CLAY [TOPSOIL]
			1.00			Firm, red brown, slightly gravelly, sandy to very sandy CLAY. Gravels are fine to coarse sub-angular to sub-rounded of mixed natural lithologies.
			3.00			Dense red/pinky brown very sandy GRAVELS and COBBLES. Gravels are fine to coarse rounded to sub-rounded of mixed natural lithologies.
						Trial Pit Complete at 3.00 m

0 1 2 3 4 5

Remarks:

Groundwater : None though very slight dampness to cobbles and gravels

Stability : Much side collapse below 1.0m in the gravels and cobbles

Key :
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

HoleBASE 3.1 (Bd 426.58) Standard Trialpit Log v2 dated 27th Nov 03

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Project Name :	Project No.:	Trial Pit No.:
Radyr Court Road	**11213**	**TP7** Sheet 1 of 1

Location :	Client :	Logged By :	Scale :
Danescourt	PMG3		1:25

Equipment : CAT40	Coordinates : -	Dimensions -
Date Excavated : 19/07/2013	Level : -	Depth : 3.00m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Soft brown slightly sandy silty CLAY [TOPSOIL]
			0.15			Firm red brown, slightly gravelly, sandy to very sandy CLAY. Gravels are fine to coarse sub-angular to sub-rounded of mixed natural lithologies.
			0.50			Dense red/pinky brown very sandy GRAVELS and COBBLES. Gravels are fine to coarse rounded to sub-rounded of mixed natural lithologies.
			3.00			Trial Pit Complete at 3.00 m

0 1 2 3 4 5

Remarks:
Pit was progressed in man made excavation. The top 0.5mbgl had been stripped, so was inferred from the side faces of the existing depression

Groundwater : None

Stability : Stable

Key :
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

HoleBASE 3.1 (Bd 426, 58) Standard Trialpit Log v2 dated 27th Nov 03

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Project Name :	Project No.:	Trial Pit No.:
Radyr Court Road	**11213**	**TP8** Sheet 1 of 1

Location :	Client :	Logged By :	Scale :
Danescourt	PMG3		1:25

Equipment : CAT40	Coordinates : -	Dimensions -
Date Excavated : 19/07/2013	Level : -	Depth : 3.20m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						Soft brown slightly sandy silty CLAY [TOPSOIL]
			0.15			Firm red brown, slightly gravelly, very sandy CLAY. Gravels are fine to medium sub-angular to sub-rounded of mixed natural lithologies.
			0.60			Dense red/pinky brown sandy to very sandy GRAVELS and COBBLES. Becoming generally coarser with depth, gravels are fine to coarse rounded to sub-rounded of mixed natural lithologies.
			3.20			Trial Pit Complete at 3.20 m

0 1 2 3 4 5

Remarks:

Groundwater : None

Stability : Stable

Key :
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

HoleBASE 3.1 (Bld 426.58) Standard Trialpit Log v2 dated 27th Nov 03

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Project Name :	Project No.:	Trial Pit No.:
Radyr Court Road	**11213**	**TP9** Sheet 1 of 1

Location :	Client :	Logged By :	Scale :
Danescourt	PMG3		1:25

Equipment : CAT40	Coordinates : 0 mE - 0 mN	Dimensions 0.00m
Date Excavated : 19/07/2013	Level : 0.0 mAOD	Depth : 3.00m (0.00m)

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
			0.15	-0.15		Soft brown slightly sandy silty CLAY [TOPSOIL]
						Firm red brown, slightly gravelly, sandy to very sandy CLAY. Gravels are fine to medium sub-angular to sub-rounded of mixed natural lithologies.
			1.00	-1.00		Dense red/pinky brown sandy to very sandy GRAVELS and COBBLES. Gravels are fine to coarse rounded to sub-rounded of mixed natural lithologies.
			3.00	-3.00		Trial Pit Complete at 3.00 m

0 1 2 3 4 5

Remarks:
Pit was progressed in man made excavation. The top 0.5mbgl had been stripped, so was inferred from the side faces of the existing depression

Groundwater : None

Stability : Stable

Key :
D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

HoleBASE 3.1 (Bd 426, 58) Standard Trialpit Log v2 dated 27th Nov 03

APPENDIX C

WINDOWLESS SAMPLE BOREHOLE LOGS

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Project Name :	Project No.:	Borehole No.:
Radyr Court Road	**11213**	**WS1** Sheet 1 of 1

Location : Danescourt	Client: PMG3	Coordinates : 0 mE 0 mN	Hole Type : WS
Equipment : DART	Diameter of Casing :	Level : 0.0 mAOD	Scale : 1:50
Diameter of Boring : 101mm	Depth of Casing :	Dates 19/07/2013	Logged By : CS

Well	Water Strikes	Samples & In-situ Testing Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.15	-0.15		Loose brown clayey sandy gravel [TOPSOIL]
								Firm orange brown, very sandy, gravelly becoming very gravelly CLAY. Gravels are fine to coarse sub-angular to sub-rounded of mixed natural lithologies. Becoming coarser with depth to include cobbles.
		1.00	CPT	N=29 (8,6,7,7,8,7)				
								Gravels become rounded from 1.7-2.5mbgl
		2.00	CPT	N=22 (8,4,5,6,6,5)				hole collapsed back to 2.0m
					2.50	-2.50		Medium dense to dense red mottled orange brown very sandy CLAY to very clayey SAND
		3.00	CPT	N=37 (7,10,9,10,9,9)	3.00	-3.00		End of Borehole at 3.45 m
		Depth (m)	Type	Results				

0 1 2 3 4 5 6 7 8 9 10

Remarks :

Key :

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

AGS

HoleBASE 3.1 (Bd 426.58) Standard Borehole Log v2 dated 27th Nov 03

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Project Name :	Project No.:	Borehole No.:
Radyr Court Road	**11213**	**WS2** Sheet 1 of 1

Location : Danescourt	Client: PMG3	Coordinates : 0 mE 0 mN	Hole Type : WS
Equipment : DART	Diameter of Casing :	Level : 0.0 mAOD	Scale : 1:50
Diameter of Boring : 101mm	Depth of Casing :	Dates 19/07/2013	Logged By : CS

Well	Water Strikes	Samples & In-situ Testing Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.15	-0.15		Loose brown clayey sandy gravel [TOPSOIL]
								Firm orange brown, sandy to very sandy, very slightly gravelly CLAY. Gravels are fine to medium sub-angular to sub-rounded of mixed natural lithologies.
		1.00	CPT	N=37 (6,8,11,8,10,8)	1.00	-1.00		Medium dense to dense brown very clayey SAND
					1.40	-1.40		Soft to firm and firm sandy and very sandy gravelly and very gravelly CLAY. Gravels are fine to coarse sub-angular to sub-rounded of mixed natural lithologies. Becoming stiff from 1.7-2.0mbgl
		2.00	CPT	N=4 (1,1,1,1,1,1)	2.00	-2.00		Soft becoming firm red brown very sandy CLAY with some fine to medium sub-rounded to sub-angular gravels
		2.70	CPT	50/235mm (9,12,10,12,20,8)	2.70	-2.70		End of Borehole at 3.15 m

Depth (m)	Type	Results

Remarks :

Key :

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

AGS

HoleBASE 3.1 (Bd 426.58) Standard Borehole Log v2 dated 27th Nov 03

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Project Name :	Project No.:	Borehole No.:
Radyr Court Road	**11213**	**WS3** Sheet 1 of 1

Location : Danescourt	Client: PMG3	Coordinates : 0 mE 0 mN	Hole Type : WS
Equipment : DART	Diameter of Casing :	Level : 0.0 mAOD	Scale : 1:50
Diameter of Boring : 101mm	Depth of Casing :	Dates 19/07/2013	Logged By : CS

Well	Water Strikes	Samples & In-situ Testing Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.15	-0.15		Loose brown clayey sandy gravel [TOPSOIL]
		1.00	CPT	N=18 (2,3,3,5,5,5)				Soft to firm and firm orange brown, very sandy, slightly gravelly CLAY with occasional bands of clayey SAND. Gravels are fine to medium sub-angular to sub-rounded of mixed natural lithologies.
					1.60	-1.60		Dense to very dense brown sandy to very sandy GRAVELS AND COBBLES. Gravels are fine to coarse rounded to sub-rounded of mixed natural lithologies
		1.80	CPT	50/285mm (9,10,11,10,12,17)	1.80	-1.80		End of Borehole at 1.80 m

Depth (m)	Type	Results

Remarks :

Key :

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

AGS

HoleBASE 3.1 (Bd 426.58) Standard Borehole Log v2 dated 27th Nov 03

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Project Name :	Project No.:	Borehole No.:
Radyr Court Road	**11213**	**WS4** Sheet 1 of 1

Location : Danescourt	Client: PMG3	Coordinates : 0 mE 0 mN	Hole Type : WS
Equipment : DART	Diameter of Casing :	Level : 0.0 mAOD	Scale : 1:50
Diameter of Boring : 101mm	Depth of Casing :	Dates 19/07/2013	Logged By : CS

Well	Water Strikes	Samples & In-situ Testing Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.25	-0.25		Loose brown silty sandy CLAY [TOPSOIL]
								Dense brown slightly clayey very sandy GRAVELS AND COBBLES. Gravels are fine to coarse rounded to sub-rounded of mixed natural lithologies.
		1.00	CPT	50/155mm (8,13,20,24,6)	1.00	-1.00		End of Borehole at 1.00 m

0 1 2 3 4 5 6 7 8 9 10

Depth (m) Type Results

Remarks :

Key :

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

AGS

HoleBASE 3.1 (Bd 426.58) Standard Borehole Log v2 dated 27th Nov 03

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Project Name :	Project No.:	Borehole No.:
Radyr Court Road	**11213**	**WS5** Sheet 1 of 1

Location : Danescourt	Client: PMG3	Coordinates : 0 mE 0 mN	Hole Type : WS
Equipment : DART	Diameter of Casing :	Level : 0.0 mAOD	Scale : 1:50
Diameter of Boring : 101mm	Depth of Casing :	Dates 19/07/2013	Logged By : CS

Well	Water Strikes	Samples & In-situ Testing Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.25	-0.25		Loose brown silty sandy CLAY [TOPSOIL]
								Soft to firm red brown sandy CLAY with occasional fine to medium sub-rounded to sub-angular gravels of mixed natural lithologies.
		1.00	CPT	N=4 (1,1,1,1,1,1)	1.00	-1.00		Soft orange brown sandy occasionally very sandy CLAY
		2.00	CPT	50/295mm (4,7,10,10,12,18)	2.00	-2.00		End of Borehole at 2.00 m

Depth (m) Type Results

Remarks :

Key :

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

AGS

HoleBASE 3.1 (Bd 426.58) Standard Borehole Log v2 dated 27th Nov 03

APPENDIX D

CABLE PERCUSSIVE BOREHOLE LOGS

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Project Name :	Project No.:	Borehole No.:
Radyr Court Road	**11213**	**BH1** Sheet 1 of 1

Location : Danescourt	Client: PMG3	Coordinates : 0 mE 0 mN	Hole Type : Cable
Equipment : DANDO 2000	Diameter of Casing :	Level : 0.0 mAOD	Scale : 1:50
Diameter of Boring : 200mm	Depth of Casing :	Dates 22/07/2013 - 23/07/2013	Logged By : CS

Well	Water Strikes	Samples & In-situ Testing Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.30	-0.30		Loose brown silty sandy CLAY [TOPSOIL]
		1.00	SPT	N=7 (1,1,1,1,2,3)				Soft brown sandy CLAY with some fine to medium sub-angular to sub-rounded gravels
					1.30	-1.30		Medium dense to dense very sandy GRAVELS and COBBLES. Gravels are fine to coarse sub-rounded to sub-angular
		2.00	CPT	N=29 (13,9,8,7,7,7)				
		3.00	CPT	N=26 (4,5,5,6,7,8)				
		4.00	CPT	N=29 (2,4,5,10,8,6)	3.90	-3.90		Firm to stiff red brown MUDSTONE with limestone cobbles and boulders (drillers description)
		5.00	CPT	50/75mm - Abandoned				
					5.20	-5.20		End of Borehole at 5.20 m
		Depth (m)	Type	Results				

Remarks :

Key :

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

AGS

HoleBASE 3.1 (Bd 426.58) Standard Borehole Log v2 dated 27th Nov 03

Intégral Géotechnique
Intégral House, 7 Beddau Way
Castlegate Business Park
Caerphilly CF83 2AX
Tel. 029 20807991
Fax. 029 20862176
mail@integralgeotec.com

Project Name :	Project No.:	Borehole No.:
Radyr Court Road	**11213**	**BH2** Sheet 1 of 1

Location : Danescourt	Client: PMG3	Coordinates : 0 mE 0 mN	Hole Type : Cable
Equipment : DANDO 2000	Diameter of Casing :	Level : 0.0 mAOD	Scale : 1:50
Diameter of Boring : 200mm	Depth of Casing :	Dates 22/07/2013 - 23/07/2013	Logged By : CS

Well	Water Strikes	Samples & In-situ Testing Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.30	-0.30		Loose brown silty sandy CLAY [TOPSOIL]
								Medium dense very sandy GRAVELS and COBBLES. Gravels are fine to coarse sub-rounded to sub-angular
		1.00	CPT	N=40 (4,7,8,12,11,9)				
		2.00	CPT	N=13 (3,2,3,3,3,4)				
					3.15	-3.15		LIMESTONE/MUDSTONE bedrock (drillers description)
					3.30	-3.30		End of Borehole at 5.20 m
		4.00	CPT	71/150mm (2,2,21,50)				
		Depth (m)	Type	Results				

Remarks :

Key :

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

AGS

HoleBASE 3.1 (Bd 426, 58) Standard Borehole Log v2 dated 27th Nov 03

APPENDIX E

FALLING HEAD PERMEABILITY TEST RESULTS

PERMEABILITY TEST DATA

PROJECT	**Radyr Court Road**	**JOB No.**	**11213**
TYPE	FALLING		
DATE	22/07/2013	**7** 00:00 hrs	
BOREHOLE NUMBER	WS1	**TEST No.** 1	
Depth of borehole at start of test (mBGL) h_i	3.00 m		From top of casing
Depth of borehole at end of test (mBGL) h_e	3.00 m		From top of casing OK
Borehole diameter (m) D	0.091 m		
Piezometer diameter (m) d	m		
Filter Backfill	No		Pea gravel
Soil in casing (m) L	0.00 m		
L/D Ratio	33.0		
Hole in Soil below base of casing (m) L	3.00 m		
Depth of casing (mBGL) h_c	0.00 m		From top of casing
Height of casing above ground level h_{uc}	0.00 m		
Ground water level (mBGL) H_G	3.00 m		
Water level at start of test below top of casing h_o	1.20 m		
	$H_{G\ TEST}$ 3.00 m		

Elapsed Time t (mins)	t (s)	Depth of water below top of casing h (m)	Head of Water $H = (H_g - h)$ (m)	Ratio H/H_0
0.0	0	1.20	1.8	1.00
0.5	30	1.50	1.5	0.83
1.0	60	1.62	1.4	0.77
1.5	90	1.80	1.2	0.67
2.0	120	1.87	1.1	0.63
2.3	138	1.95	1.1	0.58
3.0	180	2.00	1.0	0.56

TEST SECTION

Length L = **1.80** m

Area A = **0.5211** m^2

INTAKE FACTOR

Refer to BS 5930 Figure 7

Type **Special**

$F = \frac{2.32 \pi (L/D)}{D}$

F = **5.13**

TIME LAG

T = Time from start of test when $h = 0.37\ h_o$

See graph opposite

T = **2000** s

PERMEABILITY

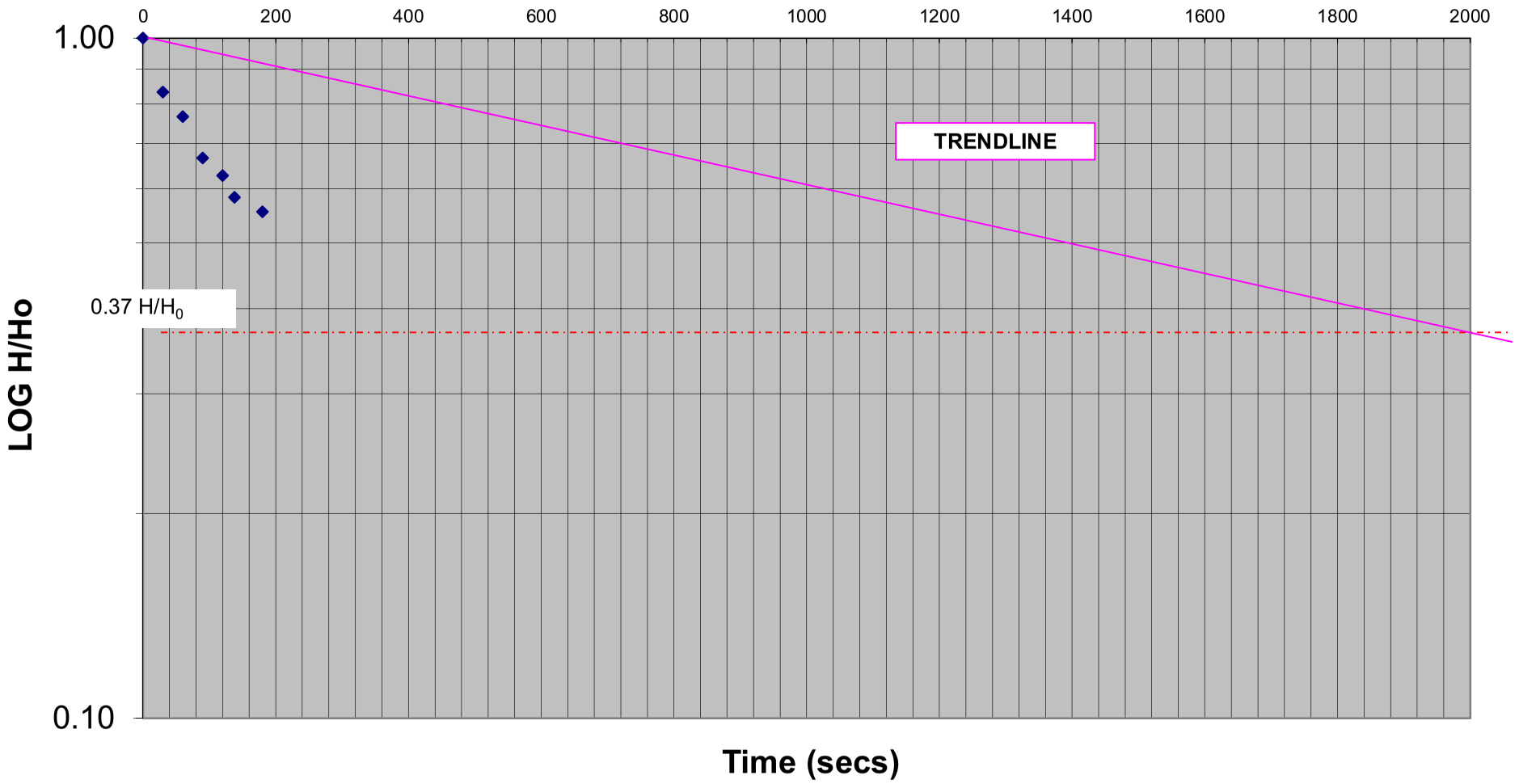
$K = A / (F * T)$

K = **5.08E-05** m/s

COMMENTS

The hole collapsed back to 2.0mbgl from 3.0mbgl prior to undertaking the test.
25L of water was poured, sufficietn to ensure that the soil backfill from 2-3mbgl was completely saturated and hole did not fill up, suggesting some infiltration is occurring as water is being poured

Borehole WS1



PERMEABILITY TEST DATA

PROJECT	Radyr Court Road			**JOB No.**	11213
TYPE	FALLING				
DATE	22/07/2013	7	00:00 hrs		
BOREHOLE NUMBER	WS4	**TEST No.**	1		
Depth of borehole at start of test (mBGL) h_i			1.00 m		From top of casing
Depth of borehole at end of test (mBGL) h_e			1.00 m		From top of casing OK
Borehole diameter (m) D			0.101 m		
Piezometer diameter (m) d			m		
Filter Backfill			No		Pea gravel
Soil in casing (m) L			0.00 m		
L/D Ratio			9.9		
Hole in Soil below base of casing (m) L			1.00 m		
Depth of casing (mBGL) h_c			0.00 m		From top of casing
Height of casing above ground level h_{uc}			0.00 m		
Ground water level (mBGL) H_G			1.00 m		
Water level at start of test below top of casing h_o			0.05 m		
		$H_{G\ TEST}$	1.00 m		

Elapsed Time t (mins)	**t (s)**	**Depth of water below top of casing h (m)**	**Head of Water $H = (H_g - h)$ (m)**	**Ratio H/H_0**
0.0	0	0.05	1.0	1.00
0.5	30	0.10	0.9	0.95
1.0	60	0.13	0.9	0.92
1.5	90	0.15	0.9	0.89
2.0	120	0.17	0.8	0.87
2.5	150	0.20	0.8	0.84
3.0	180	0.25	0.8	0.79
3.5	210	0.28	0.7	0.76
4	240	0.31	0.7	0.73
4.5	270	0.33	0.7	0.71
5	300	0.35	0.7	0.68
6	360	0.36	0.6	0.67
7	420	0.37	0.6	0.66
8	480	0.40	0.6	0.63
9	540	0.42	0.6	0.61
10	600	0.43	0.6	0.60
11	660	0.44	0.6	0.59
12	720	0.44	0.6	0.59
13	780	0.44	0.6	0.59
14	840	0.45	0.6	0.58
15	900	0.45	0.6	0.58
17	1020	0.45	0.6	0.58
20	1200	0.45	0.6	0.58
25	1500	0.45	0.6	0.58
30	1800	0.46	0.5	0.57
35	2100	0.48	0.5	0.55
40	2400	0.49	0.5	0.54
50	3000	0.51	0.5	0.52
60	3600	0.62	0.4	0.40
120	7200	0.86	0.1	0.15

TEST SECTION

Length L = **0.95** m

Area A = **0.3094** m^2

INTAKE FACTOR

Refer to BS 5930 Figure 7

Type **Special**

F = **D*2.32*Π*(L/D)**

F = **2.38**

TIME LAG

T = Time from start of test when h = 0.37 h_o

See graph opposite

T = **6400** s

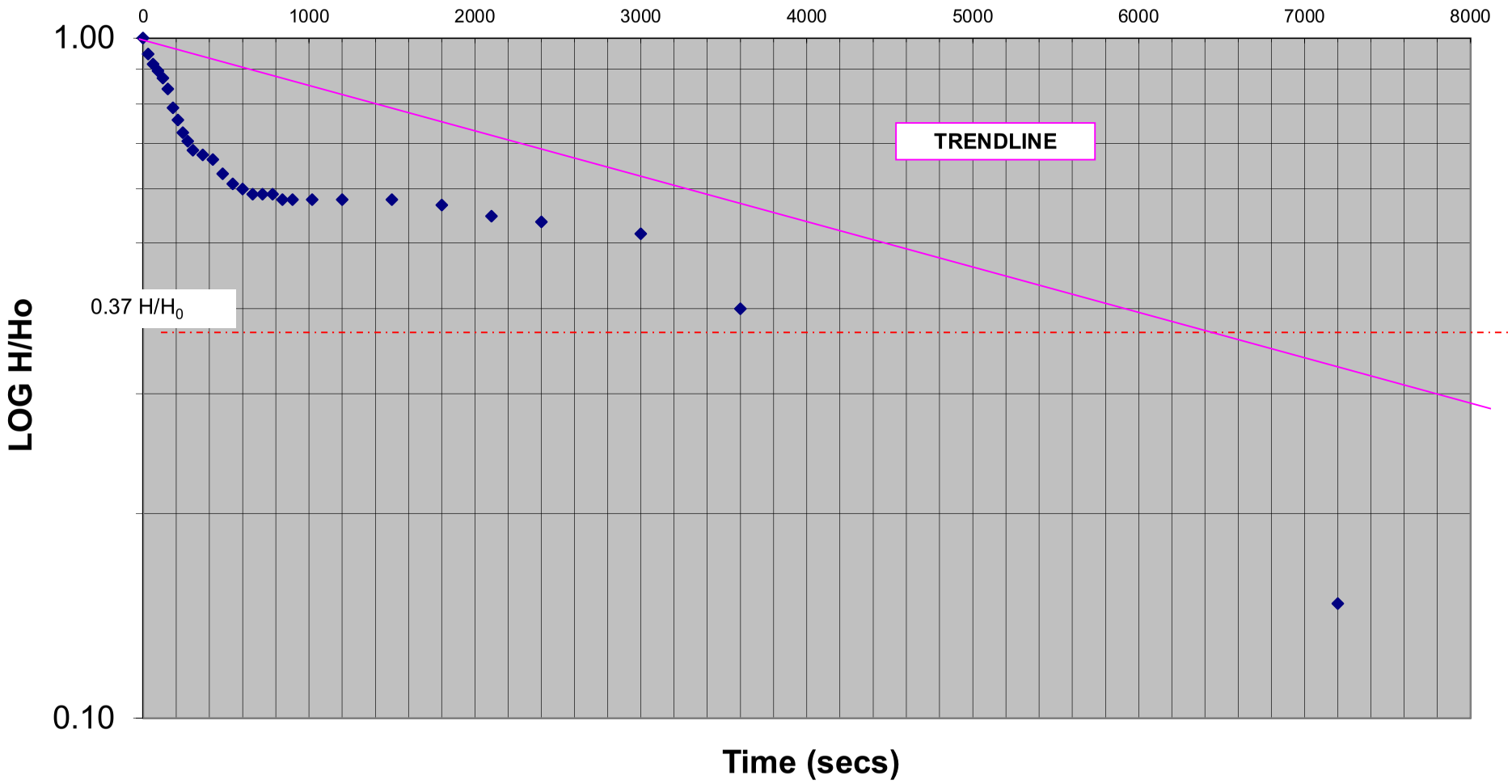
PERMEABILITY

K = A / (F * T)

K = **2.03E-05** m/s

COMMENTS

Borehole WS4



APPENDIX F

LABORATORY PHYSICAL TEST RESULTS

2788

Laboratory Report

GEO Site & Testing Services Ltd

Contract Number: 20383

Client's Reference: **11213**

Report Date: **14-08-2013**

Client **Integral Geotechnique (Wales) Limited**
7 Beddau Way
Castlegate Business Park
Caerphilly
Cardiff
CF83 2AX

Contract Title: **Radyr Court Road**

For the attention of: **Craig Smith**

Date Received: **05-08-2013**

Date Commenced: **05-08-2013**

Date Completed: **14-08-2013**

Test Description	Qty
Moisture Content 1377 : 1990 Part 2 : 3.2 - UKAS *	3.0
4 Point Liquid & Plastic Limit (LL/PL) 1377 : 1990 Part 2 : 4.3 & 5.3 - UKAS *	3.0
pH Value of Soil 1377 : 1990 Part 3 : 9 *	4.0
Water Soluble Sulphate 2:1 extract 1377 : 1990 Part 3 : 5 *	4.0

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced in full, without the prior written approval of the laboratory.

Approved Signatories:
Alex Wynn (Associate Director) - Benjamin Sharp (Contracts Manager) - Emma Williams (Office Manager)
Paul Evans (Quality/Technical Manager) - Vaughan Edwards (Managing Director)

GEO Site & Testing Services Ltd
Unit 4, Heol Aur, Dafen Ind Estate, Dafen, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784040 Fax: 01554 784041 info@geo.uk.com geo.uk.com

Client ref: **11213**

Location: **Radyr Court Road**

Contract Number: **20383-050813**

Hole Number	Sample Number	Type	Depth (m)	Description of Sample*
TP4		D	1.00	Brown slightly gravelly silty CLAY.
TP6		D	0.80	Brown slightly organic silty CLAY.
TP8		D	0.50	Brown slightly organic silty CLAY.

Note: Results on this table are in summary format and may not meet the requirements of the relevant standards, additional information is held by the laboratory

GSTL
GEO Site & Testing Services Limited

Checked By

D P Evans
Approved By:

Date Approved: 14.8.13

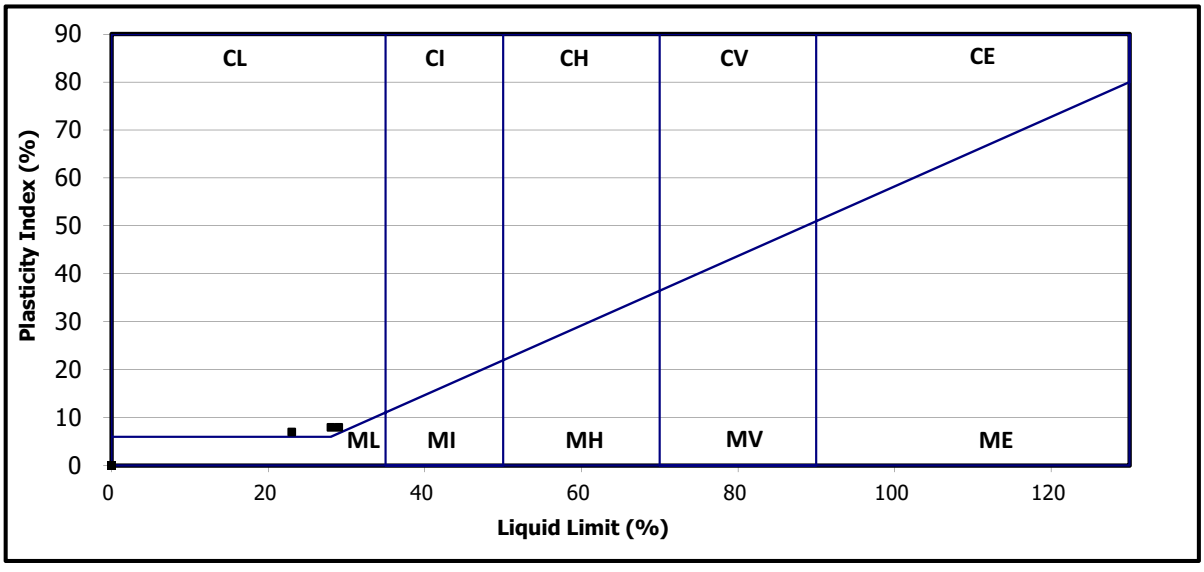
Test Report: **Method of the Determination of the plastic limit and plasticity index**
BS 1377 : Part 2 : 1990 Method 5

Client ref: **11213**
Location: **Radyr Court Road**
Contract Number: **20383-050813**

Hole/ Sample Number	Sample Type	Depth m	Moisture Content % Cl. 3.2	Liquid Limit % Cl. 4.3/4.4	Plastic Limit % Cl. 5.	Plasticity Index % Cl. 6.	% Passing .425mm	Remarks
TP4	D	1.00	12	23	16	7	100	CL Low Plasticity
TP6	D	0.80	18	29	21	8	100	CL Low Plasticity
TP8	D	0.50	16	28	20	8	100	CL Low Plasticity

Symbols: **NP : Non Plastic** **# : Liquid Limit and Plastic Limit Wet Sieved**

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.
BS 5930:1999+A2:2010



GSTL
GEO Site & Testing Services Limited

Checked By

Approved By:

Date Approved: 14.8.13

UKAS TESTING 2788

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01554 750752
Fax: 01554 770529
01554 784041
Web: www.geo.uk.com

Certificate of Analysis

Date:	14/08/2013
Client:	Integral
Our Reference:	20383-050813
Client Reference:	11213
Contract Title:	Radyr Court Road
Description: (Total Samples)	4
Date Received:	05/08/2013
Date Started:	11/08/2013
Date Completed:	14/08/2013
Test Procedures:	(B.S. 1377 : PART 3 : 1990)

Notes:

Solid samples will be disposed 1 month and liquids 2 weeks

Approved By:

Authorised Signatories:	Emma Williams Laboratory Office Manager	Wayne Honey Laboratory Technician	Paul Evans Quality Manager

Contract No: 20383-050813
Client Ref: 11213
Location: Radyr Court Road
Date: 14/08/2013

SUMMARY OF CHEMICAL ANALYSIS

(B.S. 1377 : PART 3 : 1990)

Hole Number	Sample Number	Depth m	Sulphate Content SO3 (as SO_4)			Chloride Content		pH Value @ 25°C	Organic Matter Content %	Loss on Ignition %	Remarks
			Acid Soluble Sulphate as % SO_4	Aqueous Extract Sulphate as g/l SO_4	Ground-water g/l	Soluble Chloride as % equiv. NaCl	Ground-water g/l				
			Clause 5.5.	Clause 5.5.	Clause 5.4.	Clause 7.3	Clause 7.2	Clause 9.	Clause 3.	Clause 4.	
TP1		0.70		0.02 (0.02)				7.56			
TP1		1.70		0.01 (0.02)				7.71			
TP5		1.20		0.05 (0.06)				8.03			
TP8		1.50		0.01 (0.02)				7.46			

NCP - No Chloride present

FIGURES

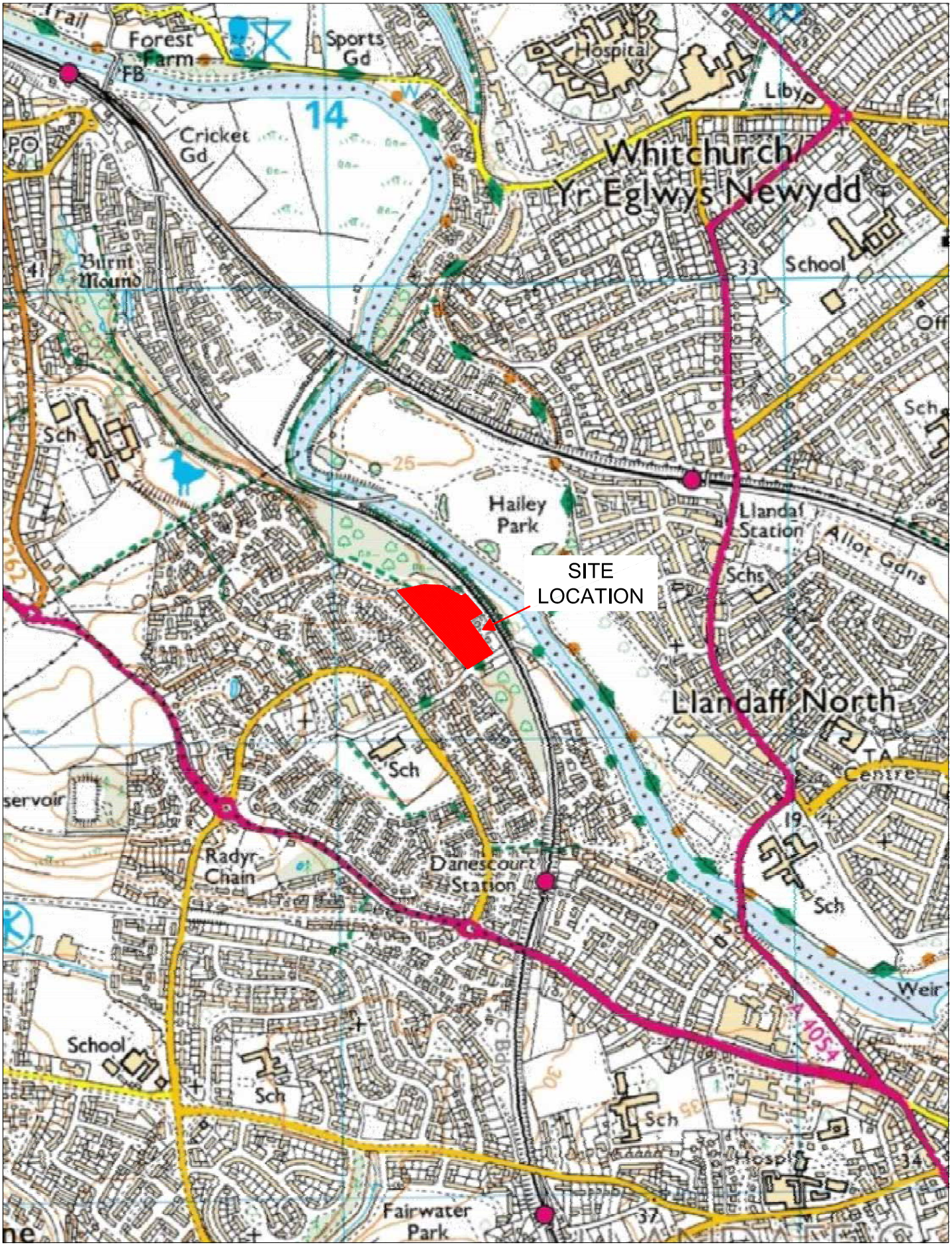

Figure 1: Site Location

Project: Radyr Court Road	Job no.: 11213	Intégral Géotechnique	Integral House, 7 Beddau Way, Castlegate Business Park, Caerphilly, CF83 2AX. Tel: 029 2080 7991
Client: Persimmon Homes East Wales	Scale: NTS		

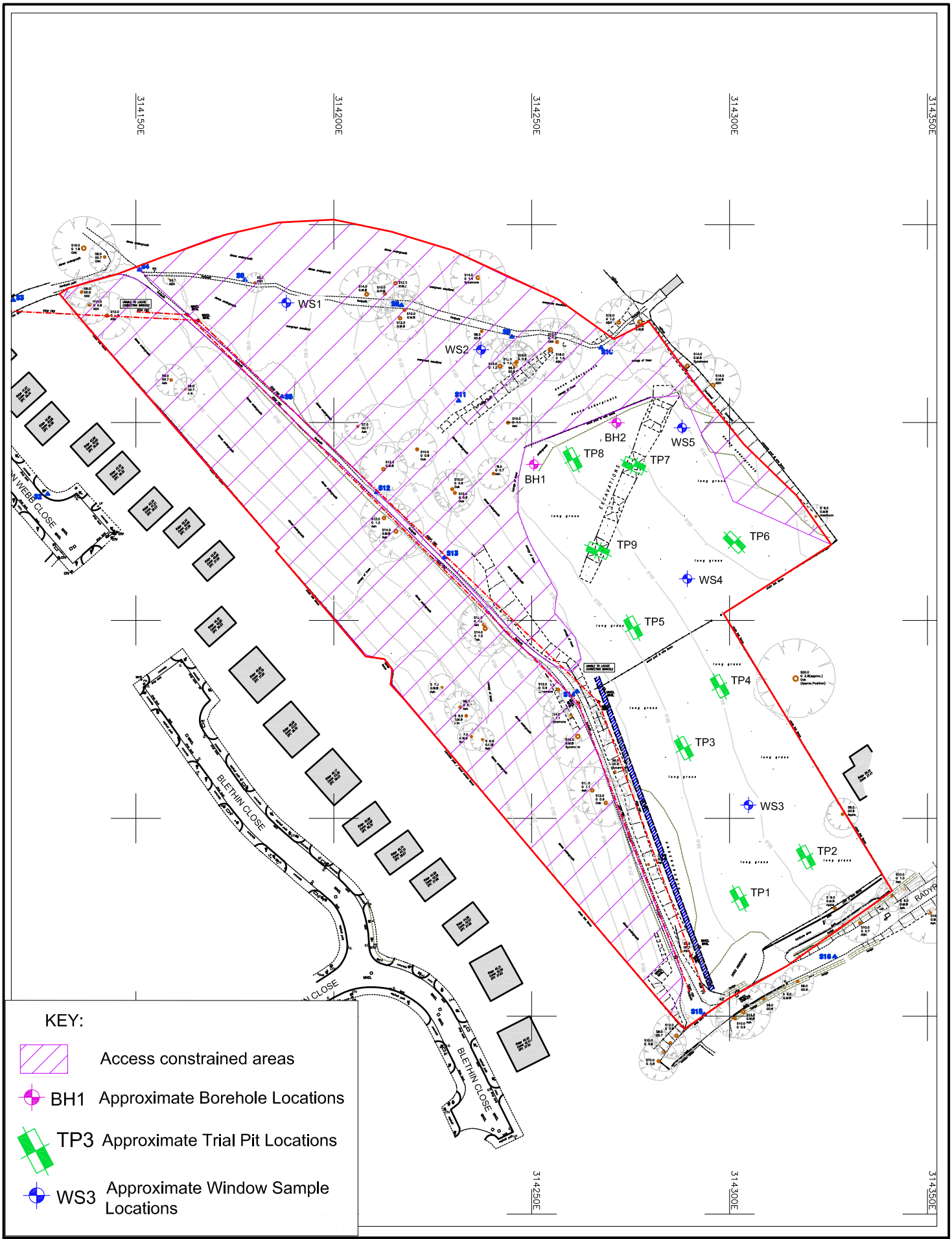

Figure 2: Site Investigation Locations (approximate)

Project: Radyr Court Road	Job no.: 11213	Intégral Géotechnique	Integral House, 7 Beddau Way, Castlegate Business Park, Caerphilly, CF83 2AX. Tel: 029 2080 7991
Client: Persimmon Homes East Wales	Scale: NTS		